

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

**REGULATIONS AND
SYLLABUSES - 1966**

Internationales Schulbuchinstitut

Braunschweig

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EAST ANGLIAN
REGIONAL EXAMINATIONS BOARD

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1964-65

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Vice-Chairman : DR. W. ROY, B.SC.(ECON.),
Headmaster, Stopsley Secondary Modern School, Luton.

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Chief Education Officer, Norfolk County Council.

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EAST ANGLIAN REGIONAL EXAMINATIONS BOARD

INTRODUCTION

The Certificate of Secondary Education was introduced to meet an existing need. In the works of Examinations Bulletin No. 1* "Parents, employers and others besides, have made it apparent over the last ten years that they desire a new system of public examination. Increasingly, the choice facing the education service became a choice between permitting the haphazard growth of a series of new examinations, and taking control of the situation by establishing a new publicly controlled examinations system".

The choice was made and teachers generally have welcomed the decision to set up a new examinations system which would be directly under the control of the schools through the Regional Examining Boards. From the point of view of the prospective users of the certificates an equally important aspect is that the C.S.E. will have national currency and can be accepted all over the country as evidence of a sound secondary education.

THE AIMS AND NATURE OF THE CERTIFICATE OF SECONDARY EDUCATION

The Schools Council for the Curriculum and Examinations hope that the outstanding characteristics of the examinations for the Certificate of Secondary Education will be their freshness and vitality, and that they will reflect and not inhibit the originality of the work being done in the schools who will provide the candidates.

The C.S.E. system will test a wide range of performances, and users of the information it provides will have a similarly wide range of requirements: they will, in other words, be interested in many different levels of achievement, as well as in many qualities that cannot be tested and described on examination certificates.

It is therefore important to secure wide understanding, both within and outside the schools, of the limitations of the assessments made by the C.S.E. examinations, and of the right way of interpreting such assessments as the system can make. If the interpretation of the assessments is not properly understood they may determine the future of a school leaver to an unwarranted extent: and if their limitations are not properly understood, the qualities that cannot be tested by examinations may be given too little weight by employers and others.

Effective teacher control of syllabus content, examination papers and examining techniques is the rock on which the C.S.E. system will stand. There is no natural law which gives the teachers a prescriptive right to control the public examinations taken by their pupils. Nor is it suggested that employers, and other users of examination results, have no interest in

*Examination Bulletin No. 1 The Certificate of Secondary Education: some suggestions for teachers and examiners, H.M.S.O.: 1963.

the syllabus content or standards. But the proper context for the discussion of these matters is the schools' work itself, which in content and teaching method must constantly seek to marry the needs of society, and of particular interests within it, with those of the individual pupil. The C.S.E. examinations are intended to be, and must be seen to be, a reflection of this school work, involving the same reconciliation of general and individual needs, and not as a convenient means of imposing a pattern upon the schools.

The C.S.E. examinations are to be offered on a subject basis. They are not designed to test achievement over the curriculum as a whole, nor are they based on some abstract concept of all-round excellence, or on an attempt to find the highest common factor amongst the probable requirements, in terms of groups of subjects, of the many different users of the results of the examinations.

MODES OF EXAMINATION

In order to satisfy the general principles set out above, the C.S.E. scheme provides for three types of examination :

1. Mode 1 — an external examination on syllabuses prepared by the Board.
2. Mode 2 — an external examination on a special syllabus submitted by a school or group of schools and approved by the Board.
3. Mode 3 — an internally set and marked examination on a special syllabus submitted by a school or group of schools approved and moderated by the Board.

THE EAST ANGLIAN BOARD

The Board has been approved by the Secretary of State for Education and Science as the appropriate board to conduct examinations for the C.S.E. in the region comprising the geographical counties of Bedford, Cambridge, Essex, Hertford, Huntingdon, Norfolk and Suffolk, together with the Isle of Ely and the Soke of Peterborough.

The governing body of the Board is the Council having a majority of teachers and representatives of all authorities in the region and of varied educational interests.

The responsibility for the detailed arrangements for the examinations is vested in two Examinations Committees, one for the Southern Sub-region (Essex, Hertfordshire and Southend-on-Sea) and the other for the Northern Sub-region (the remaining authorities). The Committee members are mainly teachers drawn from the respective Sub-regions.

Each Examinations Committee is advised by fifteen Subject Panels which between them cover the principal subjects taught in the schools. Apart from a limited number specially appointed, all members are teachers drawn from the appropriate Sub-region.

The Finance and General Purposes Committee is concerned with financial and other matters not specifically assigned to other committees. The membership includes representatives of all member authorities and teachers.

GENERAL REGULATIONS

1. *Eligibility of Candidates*

- (i) Candidates attending schools must be aged 16 or in the final term of the fifth year of a five-year course of secondary education, or must have completed such a course (the expression 'a five-year course of secondary education' includes for purposes of these conditions, any full-time course of five years' duration undertaken in any type of school after the normal age of transfer from primary to secondary education).
- (ii) Where, for the time being, pupils are unable, because of lack of maintained secondary school facilities, to take their fifth year save in a further education establishment, candidates entered by such establishments shall be accepted for the examination if they have completed, or are in the last term of, five years' full-time secondary education partly in school and partly in a further education establishment.
- (iii) Other candidates may be accepted provided that they are not less than seventeen years of age on the 1st September following the summer term in which the examination is taken.

2. *Examination Centres*

Application for registration of a school as an approved centre for the Board's examinations must be made on the official form of the Board. An Examinations Officer, who should normally be the Head of the School, must be nominated for each examination centre and will be responsible for ensuring that the examinations are conducted in accordance with the rules. The Board reserves the right to send a representative to an examination centre at any time to inspect the arrangements and the manner in which the examinations are being conducted.

3. *Date of Examinations*

The written examinations will be held in May/June on dates to be announced later.

4. *Method of Entry*

Examination entry forms will be issued in January and must be received by the Secretary of the Board at its offices not later than the 1st February. Late entries may be accepted only in exceptional circumstances and subject to the payment of a special fee up to 1st March but in no circumstances will entries be accepted after that date.

5. *Examination Fees*

These fees will be subject to review annually. For the 1965 examinations the following fees have been adopted:

Registration fee (per candidate)	£1 10s. 0d.
Subject fee	15s. 0d.
Late fee (per subject entry)	7s. 6d.

Where possible a remittance in payment of the fees due should accompany the entry form, and in any event must be paid by 31st March.

6. *Withdrawals and Refunds*

In no circumstances will registration or late fees be returnable. The subject fees may if adequate reason is given, be refunded where notice in writing of a candidate's withdrawal from all of the examinations for which he has entered is received by the Secretary prior to the commencement of the examinations. Refunds will not be made in any other circumstances.

7. *Disqualification*

Any attempt to use irregular or unfair practices at the examinations will be reported forthwith to the Secretary of the Board and may lead to disqualification.

8. *Examination Results*

Results of the examinations will be expressed for each subject in the form of grades, from grade 1 to 5. A sixteen-year-old pupil of average ability who has applied himself to a course of study regarded by teachers of the subject as appropriate to his age, ability and aptitude, may reasonably expect to secure grade 4. A sixteen-year-old pupil whose ability is such that he might reasonably have secured a pass in the 'O' level of the G.C.E. examination, had he applied himself to a course of study leading to that examination, may reasonably expect to secure grade 1, having followed a course of study regarded by teachers of the subject as appropriate to his age, ability and aptitude.

As soon as possible after the examination, result lists will be sent to Examinations Officers showing for all candidates their grades from 1 to 5 in each subject and all ungraded results.

9. *Certificates*

Certificates of Secondary Education will be awarded in accordance with the conditions laid down by the Department of Education and Science. All Certificates will be sent to the Examinations Officer, who will be responsible for their distribution.

10. *Examination Material*

All working forms (ruled paper, drawing paper, graph paper, etc.) and other examination material are to be supplied by the schools.

Mathematical tables will not be supplied by the Board, centres being asked to provide for the use of their candidates copies of logarithmic and other tables for use in examinations. These copies should be used solely for examinations and care taken to see that additional information of help to candidates is not written in the copies. Tables may be used in any examination involving calculation unless their use is specifically forbidden.

11. *Publications*

The Board's publications are as follows and may be obtained, post free, at the charges specified :

Regulations and Syllabuses 5s. 0d.

Sectional pamphlets 6d. each :

Section 1	Art and Craft,	Section 9	Modern Languages.
Section 2	Commercial Subjects,	Section 10	Music.
Section 3	Domestic Science,	Section 11	Needlecrafts.
Section 4	English.	Section 12	Religious Education.
Section 5	Geography.	Section 13	Rural Studies.
Section 6	Handicraft.	Section 14	Science.
Section 7	History.	Section 15	Technical Drawing.
Section 8	Mathematics.		

EAST ANGLIAN REGIONAL EXAMINATIONS BOARD

CONSTITUTION

Note : The following Constitution was drafted and approved when the Board was established and will be amended to cover the new situation arising from impending local authority boundary changes.

Regional Examinations Board

1. (I) For the exercise of the functions hereinafter referred to there shall be established a Regional Examinations Board to be known as the East Anglian Regional Examinations Board (hereinafter called "the Board").

(II) The region of the Board (hereinafter called "the region") shall initially comprise the administrative counties of Bedfordshire, Cambridgeshire, East Suffolk, Essex, Hertfordshire, Huntingdonshire, the Isle of Ely, Norfolk and West Suffolk, and the County Boroughs of Great Yarmouth, Ipswich, Norwich and Southend-on-Sea, and the Peterborough Joint Board. Provided that, if any alteration of the area of the Board shall at any time be accepted by the Board, the word "region" shall be construed accordingly.

(III) There shall be a Southern Sub-region comprising initially Essex, Hertfordshire and Southend-on-Sea, and a Northern Sub-region covering the rest of the region. Provided that, if any alteration of the area of the Board shall at any time be accepted by the Board, the areas of the sub-regions shall be adjusted accordingly.

Functions and Duties of the Board

2. (I) The functions of the Board shall be :—
- (a) to offer external examinations on syllabuses and examination papers prepared by the Board ;
 - (b) to publish such syllabuses and examination papers ;
 - (c) to offer external examinations on syllabuses and examination papers proposed by individual schools or groups of schools and approved by the Board ;
 - (d) to offer external assessment and validation of examinations conducted internally by individual schools or groups of schools ;
 - (e) to issue Certificates of Secondary Education to candidates judged successful in the examinations ;
 - (f) to determine the arrangements necessary for the proper conduct of the examinations for which it is responsible ;
 - (g) to appoint suitable administrative and other officers for the purpose of the exercise of its functions ;
 - (h) to raise funds by examination fees and such other means as it shall from time to time determine ;
- and

(i) to make such arrangements as it shall think necessary for the proper administration of its financial and other business.

(II) In carrying out these functions the Board shall have the duty :—

(a) to ensure that the examinations for which it is responsible are suitable for the candidates who present themselves for such examinations ;

(b) to ensure that the standards of such examinations approximate to those of the examinations conducted by other Regional Examining Boards for the Certificate of Secondary Education ;

(c) to ensure that effective arrangements exist for the full consideration of all representations received from schools, other educational establishments, candidates, local education authorities and other persons or bodies affected by or concerned with such examinations ;

(d) to provide such information on all matters connected with the examinations as the Minister of Education or the Secondary School Examinations Council may request ; and

(e) to ensure that effective arrangements exist for the conduct of research and development.

**The Council : 3.
Membership**

The Board shall be governed by a Council (hereinafter called "the Council") which shall have the functions and duties described in sections 2(I) and (II) of this Constitution except in so far as any of these functions or duties or parts thereof are allotted expressly in this Constitution to specific committees.

**Analysis of
Members
Teachers Others**

29

The Council shall consist of the following voting members :—

(a) 29 teachers serving in the schools principally concerned with the examinations in the region on the nomination of the Teachers' Associations as follows :—

National Union of Teachers—14

Association of Teachers in Technical Institutions—3

The Joint Four Association—4

National Association of Schoolmasters—4

National Association of Head Teachers—4

No Association shall appoint more than one of its representatives from teachers serving in the area of any one Local Education Authority.

14

(b) 14 teachers serving in schools principally concerned with the examinations in the region, one on the nomination of each Local Education Authority in the region, after consultation with its teaching staff.

Teachers	Others	
	14	(c) the Chief Education Officer or other representative on the nomination of each Local Education Authority in the region ;
	2	(d) one representative on the nomination of each of the Institutes of Education serving the region ;
	2	(e) 2 representatives of further education establishments in the region on the nomination of the Finance and General Purposes Committee ;
	2	(f) 2 representatives of industry and commerce in the region on the nomination of the Finance and General Purposes Committee, having regard to their interest in education ; and
—	8	(g) not more than 8 members to be co-opted by the Council, on the nomination of the Finance and General Purposes Committee, who shall bear in mind any claims for additional representation from the larger Authorities in the region ;
43	20	
	+8	

Provided always that the majority of the members of the Council shall at all times consist of teachers serving in the schools within the region which are principally concerned with examinations leading to the Certificate issued by the Board. Provided also that on the initial constitution of the Council the members nominated under sections (a), (b), (c) and (d) above shall constitute the Council and be empowered to add to their number persons nominated under sections (e), (f) and (g).

- Chairman of the Council** 4. At its first meeting the Council shall elect a temporary Chairman and a temporary Vice-Chairman, and thereafter elect annually at the first meeting to be held after 1st September, a Chairman and a Vice-Chairman one of whom need not necessarily be chosen from amongst the representative members.
- Assessors to the Council** 5. The following assessors shall be entitled to attend meetings of the Council but not to vote :—
- (a) one representative to be appointed by the Council of at least one other Regional Examinations Board at the request of this Council ;
 - (b) one of H.M. Inspectors of Schools to be nominated by the Minister of Education ;
 - (c) one local education authority officer, inspector or adviser on the nomination of the Finance and General Purposes Committee ;
 - (d) one representative of the Youth Employment Service on the nomination of the Finance and General Purposes Committee ;
 - (e) such representatives of the Minister of Education or the Secondary School Examinations Council as the Minister or the Secondary School Examinations Council may from time to time appoint ; and
 - (f) such other persons as the Council shall determine.

Appointment of Committees, Panels and Advisory Groups

6. (I) The Council shall appoint the Finance and General Purposes Committee for the region, and for each sub-region shall appoint an Examinations Committee, a set of Subject Panels, and Advisory Groups hereinafter referred to ; and these Committees, Panels and Groups shall possess the functions and duties hereinafter set out and in addition such others as the Council may think fit to delegate.

(II) The Council may appoint such other committees and panels as it may consider desirable, and may delegate to any such committee or panel such powers as it may think fit.

Functions of the Examinations Committees

7. The functions of the Examinations Committees shall be :—

(a) to determine after consultation with the Subject Panels the nature of the examinations to be set ;

(b) to make arrangements after consultation with the Subject Panels for the conduct of the examinations provided by the Board ;

(c) to appoint moderators, chief examiners, examination assessors and examiners, after considering the advice of the Subject Panels hereinafter referred to ;

(d) to approve arrangements for the adoption of syllabuses submitted by the Subject Panels or otherwise ;

(e) to ensure the maintenance of standards appropriate to the subjects taken and to the candidates participating in the examinations ;

(f) to receive and to determine all appeals against decisions of Subject Panels, chief examiners, moderators, examination assessors and examiners ; and

(g) to receive and to consider representations on matters concerned with the examinations from schools and other persons and bodies affected or concerned.

Membership of Examinations Committees

8. Each of the Examinations Committees shall consist of the following voting members :—

(a) a Chairman to be appointed by and from the Council ;

(b) thirty-four members appointed by the Council as follows :—

(i) twenty teachers, of whom at least one shall be chosen from the members of each recognised Subject Panel ;

(ii) Five officers representing the Chief Education Officers of the Local Education Authorities in the sub-region ;

(iii) one representative from each Institute of Education serving the sub-region ;

(iv) one representative of industry and commerce on the nomination of the Finance and General Purposes Committee.

Analysis of Members

Teachers Others

1

20

5

1

1

Teachers	Others
	2
	2
	3
—	—
20	9
+6	

(v) two representatives of further education on the nomination of the Finance and General Purposes Committee;

(vi) the Chairman and Vice-Chairman of the Council and the Chairman of the Finance and General Purposes Committee hereinafter referred to, *ex officio*; and

(vii) not more than three members co-opted by the Committee and approved by the Council, bearing in mind any claims to additional representation from the larger Authorities in the region.

Provided that each Committee shall always have a majority of teachers serving in the schools within the sub-region which are principally concerned with examinations leading to the Certificate issued by the Board, and provided also that at least three members of each Committee shall be selected from those members of the Council who are appointed on the nomination of the teachers' associations.

Assessors to the Examinations Committees

9. The following assessors shall be entitled to attend meetings of the Examinations Committees but not to vote :—

(a) representatives to be appointed by other Regional Examining Boards at the request of the Council;

(b) one of H.M. Inspectors of Schools to be nominated by the Ministry of Education;

(c) one local education authority officer, inspector or adviser on the nomination of the Finance and General Purposes Committee;

(d) such other persons as the Examinations Committees shall determine.

Functions of the Finance and General Purposes Committee

10. The functions of the Finance and General Purposes Committee shall include :—

(a) to determine the remuneration and conditions of service of the officers and servants of the Board, including moderators, chief examiners, examination assessors and examiners, but excluding the secretary, whose remuneration and conditions of service shall be determined by the Council;

(b) to determine the fees to be charged to candidates, schools and groups of schools taking or participating in the examinations of the Board;

(c) to administer, within the authorisation of the Council, the finances of the Board, to submit to the Council such estimates and other financial information as the Council shall require and to incur such expenditure as the Council shall direct;

(d) to advise the Council on all other matters not specifically assigned to other Committees.

- Membership of the Finance and General Purposes Committee**
11. The Finance and General Purposes Committee shall consist of the following voting members :—
- (a) the Chairman and Vice-Chairman of the Council and the Chairmen of the Examinations Committees *ex officio* ;
 - (b) the representatives of the Local Education Authorities on the Council, as appointed under clause 3(c) of this constitution ;
 - (c) six other members appointed by and from the Council having regard to any claims for additional representation from the larger Authorities in the region, but including at least three serving teachers.
- Assessor to the F. & G.P. Committee**
12. A non-voting assessor appointed by the Minister of Education shall be entitled to attend meetings of the Finance and General Purposes Committee.
- Subject Panels**
13. (I) Each Examinations Committee shall establish Subject Panels to cover the sub-region for each subject for which examinations are established, provided that the Committee may, in appropriate circumstances, create Panels to cover a combination of subjects.
- (II) For the first triennial period Subject Panels shall be constituted initially by the Council which shall appoint members in accordance with the terms of sub-section 15(I) of this Constitution, except that nominations of serving teachers shall come through each Local Education Authority acting in consultation with its teaching staff. Any subsequent casual vacancies arising during the first triennial period shall be filled in accordance with the terms of sub-section 15(I).
- Functions of the Subject Panels**
14. The functions of a Subject Panel in relation to the subject with which it is concerned shall be :—
- (a) to advise the Examinations Committee on all matters affecting the nature and conduct of the examinations ;
 - (b) to advise the Examinations Committee on the appointment of moderators, chief examiners, examination assessors and examiners ;
 - (c) to prepare, scrutinise, moderate and approve as appropriate examination syllabuses, to supervise the work of the moderators, chief examiners, examination assessors and examiners generally, and in particular to ensure that the standards of the examinations conducted internally approximate to those of its own external examinations ;
 - (d) to encourage and, if they think fit, to arrange conferences with teachers of the subject from the schools participating in the examinations ;
 - (e) to report as required by the Examinations Committee on all aspects of their work ; and
 - (f) to receive and consider representations concerned with the conduct and nature of the examinations.

- Membership of Subject Panels**
15. (I) A Subject Panel shall consist of the following voting members :—
- (a) a Chairman, to be appointed by the Examinations Committee, who shall not be the chief subject examiner, a moderator or an examination assessor ;
 - (b) not more than fifteen serving teachers of the subject in the schools participating in the examination to be appointed by the Examinations Committee from nominations made by the Advisory Groups hereinafter referred to, provided that at least one shall come from the area of each Local Education Authority within the region which has schools interested in the subject ;
 - (c) such other members as may be appointed by the Examinations Committee or co-opted by the Panel itself, provided always that the majority of the members of the Panel shall at all times consist of teachers serving in the schools within the region which are principally concerned with examinations leading to the Certificate issued by the Board.
- (II) The chief subject examiner shall normally attend meetings of the Subject Panel.
- Advisory Groups**
16. The Examinations Committees shall supervise the establishment of Advisory Groups to which all schools wishing to submit candidates for the Board's Examinations shall belong, although no school shall be obliged to belong to the Group or Groups serving the area in which it is geographically situated. A group shall normally consist of not more than twenty schools.
- Nothing in this section shall affect the right of an individual school to request an examination on syllabuses and examination papers it proposes itself, or assessment and validation of an examination it conducts internally.
- Functions of Advisory Groups**
17. The functions of an Advisory Group shall be :—
- (a) to nominate teachers from its constituent schools for service on the Subject Panels ;
 - (b) to provide a channel for the transmission of the views of serving teachers to Subject Panels ;
 - (c) to provide the necessary co-ordinating machinery where required for the establishment of schemes whereby groups of schools either submit syllabuses for external examinations for the approval of the Subject Panels or conduct examinations set and marked internally but moderated on behalf of the Regional Council.
- Membership of Advisory Groups**
18. (I) Advisory Groups shall have as voting members one representative from each school belonging to the group.
- (II) Each group shall appoint annually a Chairman and an Honorary Secretary.

(III) Groups shall invite to their meetings such other teachers from constituent schools as shall seem appropriate to them.

Duration of Membership of Council, etc.

19. (I) Membership of the Council and of its Committees, Panels and Groups shall be for three years, and one-third (or as near as may be) of the members shall retire on the thirty-first day of August in every year, provided that the first members of the Council and its Committees, Panels and Groups shall remain in office until the 31st August, 1966. A retiring member of the Council or of its Committees, Panels or Groups may be re-appointed for a further period either as a representative member or as a co-opted member.

(II) A member appointed to fill a casual vacancy on the Council, its Committees, Panels or Groups shall serve for the unexpired portion of the period of service of the member in whose place he is appointed.

Meetings of Council Committees, Panels and Groups

20. (I) The Council shall meet at least once in each year.
(II) Committees, Panels and Groups shall, subject to any directions of the Council, meet at such times as may be necessary.

(III) A quorum of the Council, the Examinations Committees, or the Finance and General Purposes Committee shall consist of one-third of its voting membership. Subject Panels, Advisory Groups and such other Committees or Panels as may be established shall be subject to standing orders prepared by the Finance and General Purposes Committee, and endorsed by the Council.

(IV) Every question to be determined at a meeting of the Council, its Committees, Panels and Groups shall be determined by a majority of the votes of the voting members present and voting on the question, and where there is an equal division of votes the Chairman of the meeting shall have a second or casting vote.

(V) The proceedings of the Council, its Committees, Panels and Groups shall not be invalidated by any vacancy in their membership nor by any defect in the nomination, appointment or qualification of any member.

Appointment, Remuneration and Duties of Officers and Servants

21. (I) The Council shall appoint a Secretary of the Board who shall be responsible for the administration of all matters arising from the duties, functions, deliberations and resolutions of the Council and its Committees, Panels and Groups.

(II) The Finance and General Purposes Committee shall appoint such other administrative officers and servants as the Council shall think requisite.

(III) The Council shall decide the remuneration and conditions of service of the Secretary, and the Finance and General Purposes Committee shall decide the remuneration and conditions of service of all other officers and servants.

(IV) The Secretary or his representative shall have the right to be present at all meetings of the Council and its Committees, Panels and Groups.

(V) Unless specifically approved by the Secondary School Examinations Council a person other than a teacher who is employed by a Local Education Authority within the region shall not be employed by the Board if he is to be wholly or mainly concerned with the administration of the school examinations in the area of the authority by which he is employed.

**Examinations
of the Board**

22. The following provisions shall apply to the examinations conducted by the Board :—

(a) every external examination shall be based upon a syllabus drawn up by or approved by the appropriate Subject Panel, which shall take into account the views of the schools participating in the examination ;

(b) every internal examination proposed by a school or group of schools for external assessment and validation shall be conducted in accordance with a scheme approved by the Examinations Committee under which syllabuses, examination papers, marking schemes, course work assessment and mark lists are prepared within the school or schools subject to approval and moderation by the appropriate Subject Panels.

**Appeals and
Disputes**

23. (I) The Council shall make adequate arrangements to consider all appeals and representations that may be made concerning the examination.

(II) In the event of a dispute with the Council, a school or a group of schools shall have the right of appeal to the Secondary School Examinations Council.

**Issue of
Examination
Certificates**

24. (I) The Board shall issue to successful candidates certificates in such form as the Secondary School Examinations Council may approve.

(II) Each such certificate shall be known as the "Certificate of Secondary Education" and shall be signed by the Chairman and Secretary of the Council and by an officer of the Ministry of Education.

**Review by
Secondary
School
Examinations
Council and
Minister of
Education**

25. (I) The Board shall give access to all papers and accounts and shall permit attendance at all meetings of the Council, Examinations Committees, Subject Panels and Groups to officers of the Ministry of Education, H.M. Inspectors and representatives of the Secondary School Examinations Council duly authorised for that purpose by the Ministry.

(II) On consideration of an appeal from a school, group of schools, candidate or other body or person concerned, the examination papers and activities of the Council may be investigated by the Ministry of Education or the Secondary School Examinations Council.

**Amendment
of
Constitution** 26.

The constitution of the Board may be amended, subject to approval by the Secondary School Examinations Council, at any time by a resolution passed at a meeting of the Council of which not less than two months' notice in writing shall have been given to each member of the Council.

**Recognition
by
the Minister
of Education** 27.

The Board shall not offer any examinations unless recognised by the Minister of Education, who may attach to such recognition conditions relating only to the following matters : the definition of the scope of the C.S.E. system : the definition of the standards of the examinations, and their maintenance on a basis of reasonable comparability : the presentation of results : general rules for the admission of candidates : constitutional arrangements (including the areas to be covered by the Boards) : national statistics and information.

Provided that the Minister shall act under this clause on the advice of the Secondary School Examinations Council.

Provided also that the Secondary School Examinations Council shall consult the Board before advising the Minister to grant, withhold or withdraw recognition, and shall in particular afford the Board an opportunity of commenting, before they are made binding, on any conditions which it is proposed to attach to such recognition.

CONDITIONS OF RECOGNITION

1. Definition of the scope of the C.S.E. system

(i) The scope of the C.S.E. system of examinations shall be determined by the Secondary School Examinations Council who will, from time to time, issue guidance on the range of performance which the examinations should be designed to test.

(ii) The examinations will be offered on a single subject basis.

2. Definition of the standards of the examinations

The standards of the examinations shall be determined by the Secondary School Examinations Council who will, from time to time, issue appropriate guidance to the examining boards.

3. Presentation of results

(i) The manner in which performances are described, whether for private communication to the candidate or his school, or for public use on a Certificate of Secondary Education, shall be determined by the Secondary School Examinations Council.

(ii) The form of the Certificate of Secondary Education, and of any other documents used for describing and communicating performances in the examinations, shall be determined by the Secondary School Examinations Council.

4. General Rules for the Admission of Candidates

(i) Candidates attending schools must be aged 16 or in the final term of the fifth year of a five-year course of secondary education, or must have completed such a course (the expression "a five-year course of secondary education" includes, for purposes of these conditions, any full-time course of five years' duration undertaken in any type of school after the normal age of transfer from primary to secondary education).

(ii) Where, for the time being, pupils are unable, owing to lack of maintained secondary school facilities, to take their fifth year save in a further education establishment, candidates entered by such establishments shall be accepted for the examination if they have completed or are in the last term of five years' full-time secondary education partly in school and partly in a further education establishment.

(iii) Other candidates may be accepted provided that they are not less than seventeen years of age on the 1st September following the summer term in which the examination is taken.

(iv) If local conditions suggest that candidates not falling within the above categories should be entered for the examinations, the Regional Examining Board will draw up regulations governing the admission of these candidates, and these regulations shall be approved by the Secondary School Examinations Council before they are adopted by the Regional Examining Board.

5. Constitutional Arrangements

(i) The constitution of the regional examining board and any amendment to it will be subject to the approval of the Minister of Education acting on the advice of the Secondary School Examinations Council.

(ii) The regional examining board will publish its constitution, with a copy of these conditions of recognition as an annex, in its first annual report or regulations; and any approved amendments shall be similarly published at the first available opportunity.

(iii) The regional examining board will be responsible for the Certificate of Secondary Education examination in its region, as defined in the Minister's letter of recognition, *and will not offer or undertake such examinations in the area of another board without the prior approval of the Secondary School Examinations Council.*

6. National statistics and information

The regional examining board shall maintain such records as the Minister of Education, acting on the advice of the Secondary School Examinations Council, may require, and will provide the Minister and the Council with such information as they may from time to time request.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 1

Art and Craft
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

ART AND CRAFT (North)

Course work 100%.

Art is so closely involved with the development of the individual, that the course must cater for the individual evolution of each child. The course is designed to give full scope to art education's many facets, and it is possible for candidates to enter work of any kind, of any size, and in any medium.

The areas of visual and aesthetic experience have widened considerably in art education, and it is hoped that within the broad framework of the course, will be found ample scope for creative experiment and much lively and expressive activity. It is suggested that the discoveries the pupils will be making through their Art, should be related to the large world of art and design, both past and present, and the interests and discrimination that can be exercised in all kinds of ways in the course of their daily lives.

There will be no set examination, candidates being judged on the work produced in the course of their studies. The following general qualities will be looked for in the assessment of the work although it is not expected that all the work will necessarily show each of these qualities :

1. the ability to express feelings through personal imagery ;
2. evidence of an awareness of the world around and the world within and the sensitivity to react to them ;
3. ability to express these reactions and ideas through created work ;
4. clarity in communicating emotional reactions and ideas through created work ;
5. capacity for sustained effort, and determination to continue from conception of idea to completed work ;
6. sensitivity and understanding of materials ;
7. disciplined freedom in the handling of the chosen media ;
8. evidence of exploration in subject and media.

The course is intended to cover five years work in the secondary school. The work submitted for assessment will be mainly from the final year of the course but specimen work from earlier years will not be excluded. Although there is no limitation on the amount of work offered for assessment, a minimum of six works is desirable, quality being preferred to quantity. The form of presentation will depend upon the facilities available to the school. In some schools it should be possible for candidates to present their work in the form of an exhibition. In others, where space is limited, the assessors may look through a folio of work. A small exhibition arranged by the candidate will, of course, be most helpful to the assessor and will also give the pupil the satisfaction of seeing his own work grouped. Candidates may be present during the assessment and may be invited to discuss their work.

The art and craft course should encourage all that is best in art education with no restriction on media, subject, size of work, or breadth of study. It should encourage teachers to broaden the scope of their courses and should provide inspiration rather than limitation.

ART AND CRAFT (South)

(a) *Course work 60%. (b) Set piece of work 40%.*

The syllabus is intended to be a real stimulus to creative activity for a pupil of average ability. It is designed to foster creative awareness and a discerning approach to life and society. More specifically, it is planned to help the individual child's expressive activity, personal feelings, inventive design, craftsmanship and vitality. The syllabus is planned broadly to allow schools to operate their own schemes of work and these may be broad or narrow according to the individual talents of the pupils and the conditions within the schools. These schemes should create a wider understanding, an awareness and an appreciation of environment within the school, the home and the outside world.

Skills and techniques are important but the emphasis should be on the imaginative and creative qualities of the candidates and their cultivation of wide awareness and sensitivity of outlook.

The work produced should be the climax of five years Art and Craft study.

COURSE WORK

Candidates are required to assemble a selection of work from the school year in which the examination is taken, together with any work retained from previous years if this be considered helpful to the candidate.

The range of the work should be as broad as possible, but where the pupil chooses a limited field of study, a higher standard of attainment will be expected.

Any evidence of study may be submitted, and this may include folders, folios, collections, written material and projects. Sufficient work should be selected to indicate clearly the range of study undertaken.

Group work is acceptable provided a clear indication is given of the candidate's contribution.

It is expected that the candidate will have sufficient judgment to select work that is likely to be of the greatest benefit to him, but the candidate may consult his teacher if he so wishes.

SET PIECE OF WORK

The candidate is required to carry out a piece of work executed during a period of up to ten hours working time within the period of four weeks preceding the date specified by the Board.

The set piece will provide a means of assessing the creative ability of the child without the stimulus of the teacher but, in other respects, in a situation as close as possible to normal classroom conditions.

The Paper will be available to the school six weeks prior to the specified date and to the candidate fourteen days prior to the commencement of his work. The candidate will be allowed a period not exceeding ten hours in which to complete his task and this may be arranged at the convenience of the school.

A record will be kept of the working time spent by each candidate, and will be submitted with the work from each school. Preparation of materials or intermediate processes, e.g., firing, etc., will not be included in the ten-hour working period. Candidates need not work at the same time and need not use the full time allowance. The Art teacher should be available during the test to assist with the technical aspects of the work being carried out and may act as invigilator.

The paper will be in the form of a series of "starting points", which are intended to act as a stimulus to creative work in the field of the candidate's own choice. Among them will be included opportunity for work in all known forms and experimental techniques of art and craft practised in schools. Candidates are required to select one of these starting points and to interpret it as they wish in any medium, combination of mediums or form of construction. Starting points may be of any kind: tactile, visual, verbal or aural.

Assessment will be made not on the ability of the candidate to illustrate the starting point, but solely on the quality of the finished product as a creative piece of work. Departure from the starting point, as the work progresses, may therefore be considerable and the link with it may be vague.

Specific instructions, e.g., craft-work measurements, dimensions, size of paper, etc., will not be given. Candidates will be required to decide these details during the fourteen days prior to the test.

GENERAL NOTES

Course work and set piece of work will be arranged for assessment at the same time, each section being clearly identified.

Marks will not be awarded for display unless submitted as an examination subject.

Individual schools, or groups of schools combining, will make their own arrangements for the assembling of the work.

Candidates and their teacher should be available if required by the Examiner.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 2

Commercial Subjects
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

COMMERCIAL SUBJECTS

The Board offers Mode 1 examinations in the following subjects :

Audio-Typing
Commerce
Elementary Economics
Office Practice
Principles of Accounts
Secretarial Work
Shorthand
Typewriting

AUDIO-TYPING (North)

- (a) Paper of 2 hours duration 90%. (b) Teacher's assessment 10%.
(c) Output test 10 minutes (for speed rating only).

For this examination each candidate must have both typewriter and dictating machine for individual use.

Straightforward dictated instructions regarding the work to be produced will be given on each tape. A previously prepared tape will be despatched to schools prior to the examination from which re-recordings can be made for the examinations. Instructions regarding re-recording will be sent with the master tape.

The examinations will be in two parts :

PART I

Will consist of an output test of 500 words. Ten minutes will be allowed for this and the speed attained will be endorsed on the final certificate.

PART II

Will consist of a selection of work which may include any of the following typed from tape :

1. Straightforward typing
2. Business letters
3. Centring and simple column work
4. Invoices
5. A carbon copy
6. Memoranda
7. Reports
8. Envelopes and postcards
9. Tabulation with leader dots
10. Use of special characters
11. Letters with continuation sheets
12. Form filling, which may include typing on ruled lines
13. Simple letter composition

NOTES

The grade of success will be based upon (a) the candidate's examination mark in Part II, (b) the teacher's assessment.

Speed will be calculated from the output test and the speed attained (subject to a minimum of 25 w.p.m.) will be shown on the certificate (using 5 w.p.m. ratings). Performance in this test will *not* affect the grade of success awarded.

Any accepted method of correction, if neatly executed, will be permitted in both parts of the examination.

The use of a dictionary is allowed throughout the examination.

EXAMINATION NOTES

1. Ten minutes "warming up" (from tape) prior to examination.
2. Then will follow the 10-minute output test to determine speed rating.
3. Two hours will then be allowed for main part of examination.

COMMERCE (South)

(a) *Written paper of 2 hours duration 80%. (b) A project set by the school or an essay of 1 hour duration set by the Board 20%.*

The purpose of the two-year course is :

- (a) to make students aware of the inter-dependence of industry and commerce and of the nature and scope of commerce, especially in relation to the position of the United Kingdom in the modern world,
- (b) to help the student to appreciate the relationship between his place in commerce, the complex machinery of the business world and the part played by commerce in his everyday life.

The WRITTEN PAPER will be in three Sections with a total of nine questions.

Section A will consist of one question which will be compulsory and will test knowledge of documents in general use, particularly order forms, invoices, statements and cheques, and will include some arithmetical calculation in connection with these documents.

Section B will consist of three questions requiring essay type answers.

Section C will consist of five questions which will, in the main, require the candidate to express himself clearly in good English although they will not be of the "essay" type, but rather of a series of questions designed to bring out the candidate's knowledge of the particular topic.

Candidates will be required to answer four questions from Sections B and C including at least one from each Section.

THE PROJECT may be undertaken at the option of the individual school. Candidates from schools who do not elect to undertake project work will be required to write an essay on a topic laid down in the Board's syllabus.

SYLLABUS

Introduction

1. Specialisation and exchange as the basis of commerce.
2. Classification of occupations and principal commercial functions.
3. The inter-dependence of industry and commerce.

The Formation and General Structure of Business Units

1. The distinguishing features of the main types of business units :
 - (a) Sole trader ;
 - (b) partnerships ;
 - (c) limited company ;
 - (d) co-operative society ;
 - (e) nationalised industries ;
 - (f) municipal undertakings.
2. Combination of business units—the trend towards the absorption of small businesses into large units.
3. The functions and workings of the Stock Exchange. Types of shares—price and yield.

Marketing

1. HOME TRADE

- (a) The channels of distribution and the effects on prices.
- (b) The function of the retailer.
- (c) Types of retail business.
- (d) The work of the wholesaler and his relationship with the retailer and to the manufacturer.
- (e) The wholesale markets, e.g., Covent Garden.
- (f) Retail price maintenance and price fixing.
- (g) Outline treatment of deferred payment and hire purchase methods.
- (h) Advertising and market research.
- (i) Consumer associations.
- (j) Standards for consumer goods.
- (k) Recent trends in distribution.

2. FOREIGN TRADE—imports and exports

- (a) Commodity markets—agents and brokers.
- (b) Bonded warehouses.
- (c) Sampling and grading.
- (d) Auction sales at warehouses.
- (e) Sources of commercial information.
- (f) Outline of import and export procedure.
- (g) Functions of H.M. Customs.

Transport

Land, water and air transport to and from Great Britain.

- (a) Comparison of the various forms of transport.
- (b) Factors influencing choice of transport.

Insurance

The general principles, terminology, and types of insurance (personal, household, business).

Banking

1. The different forms of payment including cheques and their uses in business transactions.
2. The services rendered by the joint stock banks.
3. The functions of the Bank of England and the Banker's Clearing House.

Documents

The correspondence and documents in commercial transactions.

- (a) Letters of inquiry.
- (b) Price lists.
- (c) Orders.
- (d) Invoices.
- (e) Statements.
- (f) Credit notes.
- (g) Receipt and despatch of goods.
- (h) Receipts.

Trading Terms and Simple Calculations arising

- (a) Gross profit.
- (b) Net profit.
- (c) Turnover.
- (d) Stocktaking.
- (e) Balance sheet as a statement of assets and liabilities.
- (f) Trade discount.
- (g) Cash discount.

Communications and Payments

The services of the Post Office.

ELEMENTARY ECONOMICS (North)

- (a) Written paper $2\frac{1}{2}$ hours duration 70%. (b) Oral examination 20%.
 (c) Teacher's assessment 10%.

The aim of the syllabus is to acquaint the pupil as far as possible with the varied aspects of the world of commerce with which he, as a wage-earner, taxpayer and consumer, will come into contact and to enable him to compare methods of marketing, types of production, systems of payment and so on. It is designed in fact to enable him to see how he, as an individual, fits into the complex economics of everyday life and to show the interdependence of the peoples of the modern world. It is intended that the subject be covered in breadth rather than in depth but an opportunity is also given for a more detailed study of one special aspect or other related topic in the oral questioning. Teachers may insert here specific local adaptations of the inter-relationship of commerce and industry and a general study of the different types of both in the vicinity could be undertaken. A deeper study of a local industry or shopping facilities could provide a basis for the oral examination, such study being embellished by photographs, drawings, graphs, statistics, etc., as may be properly obtained from visits on a reasonably generous time basis.

The examination will consist of :

(a) Written Paper :	
Short answer questions	20 marks
Essay type questions	50 marks
(b) Oral examination, based on one of three alternatives :	
(i) Course work to be presented at the examination	
(ii) One of the syllabus subjects below, studied in greater depth	
(iii) A related topic submitted by the school and approved by the Board	
	20 marks
(c) Teacher's assessment of work done over the whole period of study	
	10 marks
	100 marks

SYLLABUS

1. Introduction

A simple explanation of the scope of economics, i.e., the problems facing people who go to work, earn their incomes and satisfy their daily wants.

2. Division of Labour

The reasons for specialisation. Variety of occupations.

3. Money

The barter system. The uses of money. The changing value of money.

4. Earnings

How wages and salaries are determined—professional, skilled and unskilled; day and piece rates, simple bonus systems.

5. Methods of Buying and Selling

(a) By description and grade, sample, auction, direct dealing (inspection of goods, comparison of prices).

(b) Sales techniques such as hire purchase, credit sales, trading stamps, gift schemes.

- (c) Protection of the consumer, e.g., by Consumer Advisory Councils, British Standards Institution, Consumers' Association ("Which"), Citizens' Advice Bureaux to deal with consumers' complaints at local level. Protection by Acts of Parliament.
- (d) Price fixing.

6. *Advertising*

Methods, costs, advantages and dangers.

7. *Bank Services*

Deposit and current accounts. The cheque system. Credit transfers. The Clearing House system (including local clearings). Overdrafts and loans; travellers' cheques; other services of banks. Functions of the Bank of England.

All the foregoing should be treated simply.

8. *Post Office*

(See also Items 9 and 16 (b)).

- (a) Monetary services—postal order, money order, telegraphic money order, cash on delivery.
- (b) As agent for government departments—licences, pensions, etc.

9. *Savings and Investment*

- (a) Post Office, trustee savings banks, building societies, unit trusts.
- (b) House purchase.

10. *Insurance*

- (a) Principles of insurance. Personal risks, business risks. How insurance works.
- (b) Life and endowment assurance (link with savings above).
- (c) National Insurance.

11. *Rates and Taxes*

- (a) Central Government income and expenditure. The Budget, chief items.
- (b) Income Tax and P.A.Y.E. (calculations not necessary).
- (c) Local Government income and expenditure.

12. *Forms of Business Ownership*

Their management, provision of capital, disposal of profits.

- (a) Private enterprise—Sole trader, partnership, private and public limited companies, co-operative societies.
- (b) Public enterprise—Local Government trading. Central Government—nationalised industries. Public corporations.

13. *Buying and Selling*

- (a) Retail trade—The different forms of retail unit, including small shopkeepers, department and multiple stores, self-service stores, mobile shops, travelling salesmen, retail market, mail order business.
- (b) Wholesale trade—The different ways of marketing goods in bulk between producers, manufacturers and retailers, including manufactured goods, perishable foodstuffs, non-perishable foodstuffs and raw materials, home produce. The Co-operative Wholesale Society.
- (c) Cash and trade discounts.

14. *Overseas Trade*

- (a) Necessity for imports and exports.
- (b) Visible and invisible trade, balance of trade, balance of payments (simple treatment only).
- (c) Tariffs. Trading areas, e.g., Common Market, European Free Trade Association.

15. *Location of Industry*

- (a) Reasons for distribution of major industries.
- (b) The changing pattern. Central and local government measures.

16. *Transport and Communications*

- (a) Advantages and disadvantages of road, rail, sea, canal and air transport. Considerations in choosing form of transport, including cost, convenience and speed.
- (b) Communication services of the Post Office—letters, parcels, post-cards, printed papers, telecommunications.

OFFICE PRACTICE (North)

- (a) Paper I $\frac{1}{2}$ hour duration 18%. (b) Paper II 2 hours duration 52%.
- (c) Course work 30%.

The aim of the examination is to widen the range of knowledge in Office Practice in preparation for the practical application and learning of skills required for a clerical occupation.

Examination Notes

PAPER I

36 questions requiring one or two word answers or selection by underlining.

PAPER II

Choice of questions given. Four questions rating 13 marks each must be answered, each one from a different group.

COURSE WORK

Practical study which will be internally assessed. This internal assessment by the teacher should be given as follows :

Group (a)	10 marks
Group (b)	10 marks
Groups (c), (d), (e) and (f) combined	10 marks
	30 marks
	—

SYLLABUS

Paper I Elementary knowledge of the following

- (a) *Office Machinery* (uses, limitations and suitability). Duplicating equipment (spirit and ink varieties), Photocopiers, Adding and Calculating machines, Typewriters, Stapler, Punch, Date-stamp, addressing machine, Mail-handling equipment (franking, letter opening, envelope sealing, inserting and folding, addressing equipment). The purpose of Computers and Punch card machinery, Dictating machines, Collating machines. Teleprinters and the Telex service.

Wherever possible machines should be made available for practical use and it is essential that machines should have been seen actually in operation.

(b) *Documentation*

Enquiry and quotation price list and catalogue, Order, Packing/Advice/Delivery notes, Invoice, Credit note, Statement, Cheque, Receipt. Trade and Cash discounts.

(c) *Simple treatment of National Insurance, Superannuation Scheme and knowledge of P.A.Y.E. tables.*

(d) *Common Abbreviations*

Those used in simple business correspondence, book-keeping, for paper and paper sizes, and correction marks.

Paper II More detailed study of the following

(a) *Post Office Services*

Postage rates, airmail, recorded delivery, Business Reply Service, franking machine, circular letters, Certificate of posting, pre-paid replies and C.O.D., Poste restante, re-direction of mail, special delivery, Messenger service, telegrams, cables, telegraphic address, registered mail, postal orders and money orders. Post Office Guide.

(b) *Mail*

Incoming—Sorting, distribution, recording of registered mail, use of date stamp. Outgoing—Addressing and stamping of envelopes and parcels. Enclosures. How to deal with registered post. Simple postage book.

(c) *Petty Cash and Vouchers*

Simple Cash account as used for a small office, without use of vouchers. Simple Imprest account of four columns covering the following: Stamps, Tea, coffee, etc., Postal orders, etc., Office materials—local orders, and use of vouchers.

(d) *Banking*

Current and deposit accounts, rates of interest. Definition and drawing of a cheque (open, crossed, endorsed, post-dated, self, bearer, "stale", R/D and N/F, joint account and parties to a cheque). Paying-in slip, Standing order service. Safe deposits and Bank night safe service, Credit Transfer Service. Bank statements. Personal cheque account. Method of obtaining foreign currency through a bank. Traveller's cheques.

(e) *Filing and Indexing*

What it is and why it is necessary. Centralised and de-centralised systems. Types of files and equipment for Vertical, Lateral and Suspension methods. Pre-sorting, Methods of classification—alphabetical, chronological, numerical, subject and geographical, the Split-vowel system; use of Microfilm. Guide, Out and Cross-reference cards. Dead files; use of Index system; Alphabetical Index book and card index drawers. Carboned and continuous stationery. Filing of carbon copy invoices and credit notes and the necessity for checking them.

(f) *Correspondence and Records*

Candidates will be required to compose simple replies to general business letters, set out a circular letter, internal memorandum. Agenda, Summary and Minutes.

COURSE WORK

Practical application of knowledge and visits to different types of firms and telephone exchange should be encouraged.

(a) Telephone

Correct usage, diction, aids to clarification. Local, trunk, personal and transferred charge calls. Dialling code card (knowledge of dial telephones and "freefone" in areas where applicable). Telegrams and cables. Value of internal switchboard and its uses. Index book for telephone numbers and addresses. Knowledge of trunk call record and necessity for checking accounts in small firms.

(b) Filing

- (i) Practical work involving the use of two of the following : Cross referencing ; Card index ; Alphabetical filing system ; Numerical, subject or geographical filing system.
- (ii) Research into modern filing methods, e.g., magnetic tape, strip index.

(c) Reception

Reception of visitors, courtesy and diction. Appointment system. General office enquiries.

(d) Use of Ready Reckoner

Including percentage and discount.

(e) Recording

Minutes of meetings. Notification of meetings and Agenda. Summary of correspondence, messages and meeting.

(f) Use of Reference Books

Post Office Guide, Railway and Bus timetables.

OFFICE PRACTICE (South)

Written paper of 2 hours duration.

The purpose of the examination is to test the knowledge of the candidate in :

- (a) the functions of an office,
- (b) the work of a secretary,
- (c) the records, procedures, documents, and equipment in general office use,
- (d) the ability of the candidates to apply the above knowledge to a given situation.

SYLLABUS

1. Means of Communication

Letters, telegrams, telegraph and cable services, messenger and telephone, teleprinters, telex, railex.

2. Reference Books generally used in an office

Dictionaries, Post Office Guide, Whitaker's Almanack, directories.

3. Card Index and Filing

Flat, cabinet and lateral files ; alphabetical, geographical, numerical and subject filing ; visible systems.

4. *Copying and Duplicating Processes*

Carbon copies. Preparation of master copies and stencils. Methods of duplicating. Photographic method of copying.

5. *Petty Cash Book—Imprest System, Vouchers*

6. *Statutory Deductions*

Income tax, elementary P.A.Y.E., national insurance.

7. *Post Office Services*

Relating to letters, postcards, postal orders, money orders, telegrams, licences.

8. *Making up Letters for the Post*

Paper sizes, foolscap, quarto, octavo. Folding and enclosures. Addressing envelopes and preparation for post. Register of outward letters and parcels; Post Book.

9. *Business Documents*

Inquiries, orders, invoices. Debit and credit notes, statements and receipts. Cash and trade discount.

10. *Bank Accounts*

Deposit and current accounts and bank statements. Kinds of cheques. Essentials in drawing a cheque. Presenting cheques; dishonoured and unpaid cheques.

11. *Composition of Business Letters and Reports from given data*

Letters of application, answering advertisements, making appointments.

12. *Reception*

Telephone messages, dealing with callers.

13. *Meetings*

Preparation of agenda and minutes.

14. *Office Stock*

Records, withdrawal, ordering.

PRINCIPLES OF ACCOUNTS (North)

- (a) Paper I $1\frac{1}{2}$ hours duration 50%. (b) Paper II 1 hour duration 40%.
(c) Teacher's assessment 10%.

EXAMINATION NOTES

Two papers will be set with a short interval in between.

PAPER I will consist of one long compulsory question testing the application of double entry systems, the use of the ledger and subsidiary books and the extraction of a trial balance.

PAPER II will consist of a further practical question (20%) and two questions on book-keeping theory (10% each).

Part marks will be awarded in practical questions where answers are not wholly correct.

SYLLABUS

Basic Activities

1. Introduction. The necessity for book-keeping. The need for accuracy and clear presentation.
2. Introduction to the ledger as the main record. Basic card ledgers and machine recording. Introduction to the cash book, and trader's bank account.
3. Classification of accounts ; real, nominal, personal accounts.
4. Recording the basic details : capital, cash, purchases, sales, expenses. Invoices, credit notes, balancing, statements.
5. The purchase of fixed assets.
6. Trade discount : cash discount.
7. The valuation of stock.
8. Capital and revenue expenditure.
9. Profit and loss. The use of the trading and profit and loss accounts.
10. Use of the balance sheet to summarise the position of existing items.

Simple Developments

11. The classification of expenses.
12. The necessity to consider the value of stock ; stock at close ; stock at start.
13. The recording of credit transactions ; use of personal accounts.
14. The trial balance—its use and its limitations.

Subsidiary Books

15. Reasons for the removal of detail from the ledger.
16. The petty cash book.
17. Sales and purchases books and returns books.
18. The journal—its use as a record book ; opening entries ; general record ; correction of errors ; closing entries.
19. Simple treatment of columnar systems.
20. Depreciation.
21. Bad debts.
22. Provision for bad debts and discounts.
23. Knowledge of accrued expenses and payments in advance.
24. Bank loans and overdrafts, their negotiation and recording ; treatment of interest.
25. Simple bank reconciliation statements.
26. Club accounts ; receipts and payments accounts ; income and expenditure accounts.
27. Partnerships ; introduction of current accounts ; the appropriation account ; interest on capital ; partners' salaries ; interest on drawings ; detailed balance sheet.
28. Simple treatment of accounts of limited liability companies ; general introduction ; share capital ; debentures ; simple treatment of balance sheet.

PRINCIPLES OF ACCOUNTS (South)

(a) Paper I 2 hours duration 60%. (b) Paper II 1 hour duration 40%.

The aim of the course is the study of accounts as records of transactions and as aids to the efficient management of the business of a sole trader, simple partnership and non-trading organisation. In addition to the ability to record transactions by double-entry book-keeping, candidates will be expected to understand and explain the significance of the accounts they prepare.

The examination to be in two parts.

PAPER I to be entirely a test of mechanical book-keeping knowledge, with Cash Book, other books of original entry and ledger posting up to Trial Balance. Very simple final accounts may possibly be included.

PAPER II to test understanding, and consist of a selection of short theoretical questions, Club Accounts, simple partnerships and provisions and adjustments.

1. Recording of transactions.
 - (a) The cash book and discounts.
 - (b) Balancing.
 - (c) Posting to the ledger.
 - (d) Credit transactions and sources of information.
 - (e) Books of original entry :
 - (i) Journal.
 - (ii) Purchase and sales books.
 - (iii) Returns books.
2. Trade discount.
3. Use of the documents or copies as books of original entry.
4. Simple reconciliation of bank balance.
5. Balancing accounts—Trial Balance—closing accounts.
6. Simple trading accounts, profit and loss account and balance sheet.
7. The use of analysis books—Petty Cash Book (imprest system).
8. Distinction between capital and revenue expenditure.
9. Current and fixed assets.
10. Partners' current accounts, interest on capital, sharing of profits.
11. Analysis of simple balance sheet.
12. Gross and net profits and their relationships to turnover and the rate of stock turnover.
13. The difference between fixed and variable expenses.
14. Adjustments for accrued expenses and payments in advance.
15. The reasons for calculating depreciation and the simple use of the three most common methods.
16. The writing off of bad debts.
17. Elementary treatment of the accounts of clubs and societies.

SECRETARIAL WORK

Written paper 2½ hours duration.

The examination will test the candidate's ability :

- (a) to transcribe accurately and neatly and with proper attention to lay-out, capitalisation, spelling, punctuation and paragraphing based on the dictation of three passages each of two minutes duration at 60 w.p.m. and 80 w.p.m., transcripts being required at one speed only ;
- (b) to prepare a letter or sequence of letters in a given set of circumstances, particulars of which will be dictated, or given, to the candidate at the examination ;
- (c) to summarise letters or other documents or make a report on a document or meeting ;
- (d) to prepare a tabulation from dictated notes or MSS. or printed form.

The speed of dictation of the matter transcribed will be shown on the certificate. The use of an eraser and of an English dictionary is permitted in the examination.

SHORTHAND

Two examinations will be held within a fortnight during the last term, with different material for each examination, and at each examination two passages of three minutes each will be read at each speed from 50 w.p.m. to 100 w.p.m. (in tens) as required. Success in any two transcriptions at any one speed will satisfy the examiner.

The standard of word difficulty will be uniform throughout the speeds and the material for the examination will be as near as possible to that used in everyday business correspondence or simple memoranda or reports.

At each examination candidates may, if they wish, take down any number of passages, but submit a transcription of one or two passages, which may be at the same speed or different speeds. In order to qualify for a certificate, however, a candidate must submit from either one or two examinations *two* passages at the same speed.

Any system of shorthand may be used but notes must be submitted at all speeds.

Notes may be written in ink or pencil but transcripts must be written in ink or typewritten.

The transcription rate for handwritten or typewritten work at all speeds is 5 words per minute.

The use of an English dictionary will be permitted in this examination.

NOTES

1. *Examinations at higher speeds will be made available on request to the Secretary to the Board not later than December 31st in the year prior to the examination.*
2. *Where candidates are to use a system other than Pitman's, notice must be given to the Board by December 31st in the year prior to the examination.*

TYPEWRITING

(a) Paper of 2 hours duration 90%. (b) Course work 10%. (c) Output test 10 minutes (for speed rating only).

The examination will comprise the following parts :

1. Output Test of 3,000 strokes with time limit of 10 minutes, with own line endings.
2. The main part of the examination which will consist of a selection from the following, which may be presented in manuscript or letterpress ; candidates will be expected to have a knowledge of the most commonly used printers' signs, and to have the ability to follow simple instruction.
 - (a) Business letters on octavo or quarto paper, which may include a continuation sheet.
 - (b) Use of carbon copies.
 - (c) Envelopes and postcards.
 - (d) Memoranda.
 - (e) Typing of business documents on forms provided, which may be lined.
 - (f) Display work, e.g., notices, menus, advertisements, price lists, etc.
 - (g) Short literary article.
 - (h) Ruled tabular exercise on quarto paper.

NOTES

1. The grade of success will be based upon the candidate's course work and examination mark in section 2 above only.
2. Speed will be calculated from the output test and the speed attained (subject to a minimum of 25 w.p.m. and a satisfactory standard of accuracy) will be shown on the certificate (using 5 w.p.m. intervals). Performance in this test will not affect the grade of success awarded.
3. Any accepted method of correction, if neatly executed, will be permitted in both parts of the examination.

COURSE WORK

Candidates must submit a folder containing not less than ten varied pieces of work marked by the teacher. The folders may be called in for inspection by the examiner.

EXAMINATION NOTES

1. 10 minutes will be allowed for "warming up" prior to the examination.
2. Then will follow the 10-minute output test upon which a speed rating will be based.
3. 2 hours will then be allowed for the main part of the examination.

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SECTION 3

Domestic Science
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

DOMESTIC SCIENCE (North)

- (a) *Written paper* $1\frac{1}{2}$ hours duration plus 15 minutes reading time 30%.
(b) *Practical test* $2\frac{1}{2}$ hours duration 50%. (c) *Teacher's assessment* 20%.

The syllabus has been prepared on the assumption that 3 years basic study will be followed by a further 2 years work leading up to the examination. Its aim is to prepare pupils to care for a home and a family under varying conditions, emphasising the basis of sound nutrition and to prepare pupils to live full, interesting lives and to be helpful members of the community.

It is assumed that the first three years basic study will include :

- (a) Importance of cleanliness of self and surroundings.
- (b) Safety in the home ; simple first aid.
- (c) Simple food values.
- (d) Choice, cost and storage of foods.
- (e) Knowledge of basic methods of cooking, e.g., boiling, steaming, stewing, baking, frying, grilling, roasting and braising.
- (f) Basic skills and foundation recipes. Culinary terms.
- (g) Planning preparation and serving of family meals.
- (h) Simple preservation.
- (i) Choice, care and use of modern equipment.
- (j) Care of natural and man-made fibres.

The final two years work will cover the following matter :

1. *Home*

Development of a house into a home. Types of homes, e.g., house, flat, caravan. Essential services—gas, electricity, water, sewerage. Heating, lighting, ventilation. Furnishings. Care and cleaning of house and contents.

2. *Management of time and money*

Allocation of money into rent, mortgage, rates, heating, lighting, food, clothing. Use and misuse of hire purchase. Savings, insurance. Discrimination in face of modern advertising. Consumer protection. Conservation of time and energy. Leisure.

3. *The Family*

Provision of balanced family meals. Meals for all occasions and entertaining duties as hostess and guest. Special diets, e.g., invalid and vegetarian. Convenience foods and experimental cookery. General care of young children under school age, including diet, health and clothing. Introduction to behaviour problems. Simple home nursing. The family wash—use of laundry and launderette. Personal grooming and hygiene.

4. *Social Services*

Health service, clinics. Hospital, ambulance and fire services. Disposal of refuse, sanitary inspection. Citizens' Advice Bureau. Pensions. Women's Voluntary Services, Red Cross, Home helps, etc.

EXAMINATION NOTES

Practical Examination

It is recommended that not more than 8 candidates should be examined at any one session and, if possible, a cooker should be allowed for each candidate.

The examination will consist of :

- (a) the preparation, cooking and service of a meal ;
- (b) finishing laundrywork ;
- (c) an observation or judgment test.

There will be a preparation period of $1\frac{1}{2}$ hours arranged not more than 7, and not less than 3 days before the practical examination : during this period tests will be allocated and candidates will be required to prepare :

- (a) choice of work ;
- (b) shopping lists with cost of main ingredients ;
- (c) time plan.

Recipe books should be available during the preparation period and the practical tests. Facilities should be available for washing necessary garments before the practical examination.

Written Paper

The paper will consist of :

- (a) 20 short answer questions ;
- (b) choice of 3 out of 6 long answer questions.

Teacher's Assessment

Each teacher will be required to provide for each candidate an assessment based on the work done during the course together with her judgment of the girl's general ability in the subject.

DOMESTIC SCIENCE (South)

- (a) *Written paper* $1\frac{1}{2}$ hours duration plus 10 minutes reading time 35%.
- (b) *Practical examination* 2 hours duration 45% (practical test 40%, judgment test 5%).
- (c) *Course work* 20%.

The aim of the course is to develop and encourage in the candidates a wide knowledge of home making. The individual needs of the pupils should be considered, and they should be taught to develop their skills and use judgment and initiative. Account should be taken of modern trends and all work undertaken be applied to present day developments. It is assumed that the subject will have been studied over the last three years.

SYLLABUS

Candidates will be required to study Section I and any two other sections.

Section I. Food for the Family

Choice, use and care of cookery equipment. Budgeting, storage and use of food. Basic methods of cookery. Planning, preparing and serving nutritious meals.

Section II. The Home

Acquiring a home—purchase, mortgage, rent, insurance, rates. Hire purchase. Essential services in the home—gas, electricity and water. Heat, light and ventilation. Colour and design in relation to rooms, furniture and furnishings. Organisation and care of the home. Choice, use and care of household equipment. Safety in the home.

Section III. The Family and its place in the Community

Health and well being of the family. Human relationships. Money matters. Income and expenditure—savings—charities. Use of leisure. Social services.

Section IV. Clothes and Personal Appearance

Good grooming. Choice, use and care of laundry equipment. Choice of detergents and their use in the laundering of natural and synthetic fabrics. Valeting. The place of launderettes, laundries and dry-cleaners in the community.

EXAMINATION NOTES

Theory Paper

Part A. Candidates will be required to answer either a question on the topic they have studied or a broad general question covering many aspects of the syllabus.

Part B. This part of the paper will be divided into the four sections corresponding to the four sections of the syllabus. Each section will be composed of three questions and candidates will be required to answer three questions, one from each section studied.

Practical Examination will be of two hours to fit into a normal practical session. Recipe books may be used throughout the practical examination.

Preparation time of 45 minutes, at least two days before the practical examination, will be allowed during which candidates will be expected to plan the test, order stores and to give a brief sequence of work. The practical examination will be based on Section 1 and the two other sections chosen. Candidates will be allowed to work any *one* from 6 set tests. In addition to carrying out this work in the allotted time, candidates will be required to take a judgment test for which 15 minutes will be allowed.

It is recommended that no more than eight candidates be examined at one time.

Teacher's Assessment

The work done during the Christmas and Easter terms of the final year should be assessed regularly by the Domestic Science Teacher and records kept.

Topic (optional)

Candidates wishing to study an individual topic may do so and the work will be assessed by the Domestic Science teacher. A question will also be set on the theory paper to test this knowledge. Books, etc., will not be examined but must be available for moderation.

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SECTION 4

English Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

ENGLISH (North)

(a) Paper I 1½ hours duration 30%. (b) Papers II and III 2 hours duration plus 10 minutes reading time 30%. (c) Course work 20%. (d) Oral examination 20%.

The examination will be on a single subject, English. Its aim will be to explore the candidates' ability to communicate easily and successfully in both writing and speech, to express and describe personal reactions and personal experiences, to think logically, and to show some knowledge and appreciation of literature in its various forms.

The examination will consist of two written papers, an inspection of course work, and an oral test (details of which will be published as an addendum).

Candidates will take Paper I and EITHER Paper II OR Paper III.

PAPER I

Question 1 will consist of continuous writing. Candidates will be required to write for approximately an hour on ONE subject from Section A OR TWO subjects from Section B.

Section A will consist of six subjects which will allow candidates to write freely in any way they think appropriate. The topics will give opportunities for imaginative, descriptive, narrative, explanatory and/or factual writing, and writing involving argument or discussion.

Section B will be divided into two parts, and one question must be answered from each part. The questions in the first part will require imaginative, descriptive, and narrative writing. Those of the second part will call for writing that is explanatory and/or factual, or which involves argument.

The subjects set in Section A call for a type of writing that requires a considerable development of ideas. However, it has been recognised that some candidates show their ability to more advantage when given the opportunity to present two shorter compositions requiring intensive writing. As the topics in Section B call for shorter treatment, it is considered necessary that the candidates should not be allowed to confine their writing to two similar types of composition.

Question 2. This will be of a composite nature covering two or more of the following elements :

- (a) Understanding and appreciation of a passage of poetry or prose of literary merit in contemporary language.
- (b) Understanding of a prose passage which may be taken from newspapers, magazines, pamphlets, directives, or manuals of instruction.
- (c) Ability to present the salient points of a passage either in continuous prose or in note form ; a formal precis will not be required.
- (d) Critical appraisal of the persuasive techniques used in television, radio, newspapers, journals, posters, leaflets, and other similar forms of communication. This will not necessarily be restricted to advertising material, but may call for discrimination and evaluation of any material designed to influence the individual.
- (e) Ability to write letters of all types.

Rough paper will be provided for preparation.

PAPER II

The aim is to encourage extensive reading. The reading during the last two years of the course of a minimum of 16 books (largely by different writers) of literary merit is suggested. A recommended book-list is appended, but is not intended to be exhaustive. Questions will be set on prose, poetry, and drama.

Candidates will be expected to answer four questions of equal mark-value, choosing at least one from each section.

Outside the limits of the examination-time, the invigilator will read the rubric to the candidates, and give them an opportunity to ask questions about it.

Rough paper will be provided for preparation.

Book List

Corduroy	Adrian Bell
Jane Eyre	Charlotte Brontë
Wuthering Heights	Emily Brontë
The Worst Journey in the World	A. Cherry-Garrard
The Cave	Richard Church
An Outpost of Progress	Joseph Conrad
Four Tales	Joseph Conrad
The Nigger of the Narcissus	Joseph Conrad
The Autobiography of a Super-Tramp	W. H. Davies
David Copperfield	Charles Dickens
Great Expectations	Charles Dickens
Oliver Twist	Charles Dickens
Sherlock Holmes Stories	Conan Doyle
My Family and other Animals	Gerald Durrell
The Bafut Beagles	Gerald Durrell
Where Angels Fear to Tread	E. M. Forster
Lord of the Flies	W. Golding
My Childhood	Maxim Gorki
Goodbye to All That	Robert Graves
Far From the Madding Crowd	Thomas Hardy
The Mayor of Casterbridge	Thomas Hardy
The Trumpet Major	Thomas Hardy
The Short Stories about Nick	Ernest Hemingway
People and Diamonds	David Holbrook (Ed.)
A High Wind in Jamaica	Richard Hughes
In Hazard	Richard Hughes
Some of the Stories from Dubliners	James Joyce
Brother to the Ox	F. Kitchen
Sons and Lovers	D. H. Lawrence
Some Short Stories	D. H. Lawrence
To Kill a Mocking Bird	Harper Lee
Cider with Rosie	Laurie Lee
God Made Sunday	Walter Machen
Ring of Bright Water	Gavin Maxwell
The Rocks Remain	Gavin Maxwell
Animal Farm	George Orwell
English Fables	James Reeves
The Loneliness of the Long Distance Runner and other Stories	Alan Sillitoe
Tom Sawyer	Mark Twain
Huckleberry Finn	Mark Twain
Roughing It	Mark Twain
Pudd'nhead Wilson	Mark Twain
Men and Gods	Rex Warner
Short Stories	H. G. Wells

Off-Beat (Short Stories)
Tarka the Otter
Salar the Salmon

F. Whitehead (Ed.)
Henry Williamson
Henry Williamson

Poetry

Candidates will be expected to be acquainted with a fair range of narrative and lyrical poetry, including the work of modern poets. The anthologies suggested for Paper III may be of help.

Drama

Candidates will be expected to have acquaintance with some full-length plays; these should include, as well as suitable well-known and accepted plays from the past, some examples of modern dramas. (The following titles of modern plays are offered, merely as examples: *Pygmalion*, *St. Joan*, *The Apple Cart*, *The Government Inspector*, *The Caucasian Chalk Circle*, *Noah*, *Roots*, *A Man for all Seasons*, *A Resounding Tinkle*, *The Long and the Short and the Tall*.)

Candidates should, if possible, be taken to see at least one performance of a play in the professional theatre and be afforded facilities for viewing dramatic productions on the Schools Television Services. Questions may be set to allow candidates to write about the plays seen or on any aspect of dramatic productions.

PAPER III

This paper is intended for those who have studied intensively certain works of literature. There will be a list of 16 books (eight prose; four verse anthologies; four plays) and each candidate will be expected to have studied intensively two prose works, one verse anthology, and one play. It is not intended to limit the reading of candidates to the books set. Some of the questions will be open-ended; that is, they will invite evidence of further reading on related matters beyond the books set. The book-list is appended.

Prose

Wuthering Heights	E. Brontë
Great Expectations	C. Dickens
My Family and other Animals	G. Durrell
Cider with Rosie	Laurie Lee
The Pearl	J. Steinbeck
Huckleberry Finn	M. Twain
There is a Happy Land	K. Waterhouse
The History of Mr. Polly	H. G. Wells

Poetry Anthologies

Every Man Will Shout (Ed. Mansfield and Armstrong, Oxford University Press).

Flash Point (Ed. Shaw, Arnold).

Iron, Honey, Gold, Bk. 2 (Ed. Holbrook, Cambridge University Press).

Modern Poems Understood (Ed. Gillam, Harrap).

Drama

The Government Inspector	N. Gogol
Macbeth	W. Shakespeare
Pygmalion	G. B. Shaw
Roots	A. Wesker

Candidates should, if possible, be taken to see at least one performance of a play in the professional theatre and be afforded facilities for viewing dramatic productions on the Schools Television Services.

Four questions of equal mark-value must be answered, covering each of the three sections (a) prose, (b) poetry, (c) drama; at least one must be an open-ended (starred) question. Candidates may not answer more than one question on a single set-book of prose or drama. Context questions will not be set.

Outside the limits of the examination-time, the invigilator will read the rubric to the candidates, and give them an opportunity to ask questions about it.

Rough paper will be provided for preparation.

COURSE WORK

Course work will consist of the normal work of the candidates in all aspects of English during the last two years of the course, but outstanding pieces of work from previous years shall not be excluded. All course work will be available for inspection if required.

Candidates may use dictionaries throughout the examination.

A reasonable accuracy in the mechanics of English is required. Hand-writing will not be penalised unless it hampers communication.

ENGLISH (South)

(a) Paper I of 2-2½ hours duration 25%. (b) Paper II of 2-2½ hours duration plus 10 minutes reading time 25%. (c) Spoken English 25%. (d) Course work 25%.

The aim of the examination is to encourage and reward lively and imaginative work in English based upon wide but thoughtful reading, and the practical, creative and artistic uses of both the written and the spoken word.

Paper I will seek to test a candidate's general skill in writing and the quality of his discrimination. Opportunity will be given for him to display his creative and imaginative powers.

Paper II will be designed to test the result of a candidate's reading and to ascertain the value of such reading to him. Questions, therefore, will be linked where possible to personal life and the problems the candidate is likely to meet. Texts may be taken into the examination room.

The section on Spoken English is provided to encourage fluent and effective communication. There will be an internal assessment as well as an external test, and the syllabus should provide for varied challenging experiences involving continual practice in the spoken word.

Course Work should be related to the syllabus and its stated aims but teachers are free to encourage individual experiment and a wide variety of interests. The folder submitted will be assessed internally and moderated externally.

1. PAPER I

The paper will be in four sections. Candidates may answer either one question from Section A plus one question from each of Sections C and D (three questions in all).

or one question from Section B plus three other questions taken from Sections C and D of which not more than two questions may be from either of these Sections (four questions in all).

Candidates will be expected to show a satisfactory standard in the basic requirements of written English. Dictionaries may be used. The average candidate will be able to answer the questions in about two hours. A maximum of two and a half hours, however, will be allowed.

Section A. Continuous Writing

Candidates may select one from a number of questions asking for continuous writing. Where it may be helpful, suggestions will be given as to possible treatment but these suggestions need not necessarily be adopted. A wide choice of subjects will be offered. Candidates choosing to answer a question from this section will be required to answer two more questions, one from Section C and one from Section D. They may not answer questions from Section B.

Section B. Continuous Writing

Candidates may select one from a number of questions which call for continuous writing of the kind required in informative prose (such as instruction, explanation or description) or in a letter (formal or informal). Candidates choosing to answer a question from this section will be required to answer three more questions chosen from those in Sections C and D, choosing not more than two questions from either of these sections. They may not answer questions from Section A.

Section C. Comprehension

The actual comprehension test may take one of many forms. Candidates may be required to make a summary, or notes for a summary, or to expand given notes, etc. They may also be asked to complete a form demanding factual answers and personal data (e.g., application for membership of organisations, or for licences of different kinds) and to show an understanding of the reasons for the questions as well as the ability to answer them.

Section D. Use and Abuse of Language

Choice may be made from a number of questions designed to test the candidate's awareness of the various ways in which language is used and abused for specific purposes in different media. Questions may be based on examples taken from advertisements, newspapers and journals, television or radio, or from literature. The approach will be critical rather than literary, but questions may include appreciation of a passage from a poem, play or story.

Candidates may be required :

- (a) to detect tendentious use of language in newspaper and other written reports (use of emotive language, exaggeration, understatement, imprecision, misrepresentation);
- (b) to make critical comparison of differing treatments of the same material according to the standpoints and intentions of the writers;

- (c) to comment critically on the use of language in particular advertisements or groups of advertisements ;
- (d) to show appreciation of the ways in which language is used. (Candidates will not need a technical literary vocabulary.)

2. PAPER II

The paper will be in three sections : Prose, Poetry, and Plays, based on the prescribed reading list. A candidate must answer five questions, at least one from each section. Books in the Prose section on which particular questions will be asked have been starred, but there will be questions which can be answered from a general reading in this section. The questions will be framed to enable a candidate to show his receptive ability and will provide opportunity for personal writing. The average candidate will be able to answer the questions in about two hours. A maximum of two and a half hours, however, will be allowed.

Section A. Prose

There are three parts to this section : general reading and two themes. Under general reading, there will be an either/or question on each starred book and three questions which can be answered by reference to the other books. For each of the themes, there will be one either/or question on the starred book and two questions which can be answered by reference to the other books. This will allow a candidate to prepare for this section by concentrating on the general reading or on one of the themes or on any combination of two or all of the parts. It is hoped the reading will be as wide as possible.

GENERAL READING LIST

*Great Expectations	C. Dickens
*Lord of the Flies	W. Golding
*People and Diamonds	D. Holbrook (Ed.)
The History of Mr. Polly	H. G. Wells
A Pattern of Islands	A. Grimble
The Day of the Triffids	J. Wyndham
The Gun	C. S. Forester
My Family and Other Animals	G. Durrell

THEME 1—COURAGE

*The Pied Piper	N. Shute
Maneaters of Kumaon	J. Corbett
Radium Woman	E. Doorly
African Queen	C. S. Forester
The Diary of Ann Frank	A. Frank

THEME 2—GROWING UP

*Huckleberry Finn	M. Twain
Lorna Doone	R. Blackmore
Old Yeller	F. Jipson
Cider with Rosie	L. Lee
A Kid for Two Farthings	W. Mankowitz

Section B. Poetry

There will be seven questions. Two questions will be set on the prescribed poems in each anthology. The remaining question will be of a more general nature.

(a) Twentieth Century Narrative Poems M. Wollman (Ed.)

The following Poems :

An Incident in the Early Life of Ebenezer Jones, Poet	Betjeman
The End of the World	Bottomley
Goliath	de la Mare
Journey of the Magi	Eliot
Paul's Wife	Frost
The Stone	Gibson
The Sacrilege	Hardy
Danny Deever	Kipling
Snake	Lawrence
Spain, 1809	Lucas
The Combat	Muir
Strange Meeting	Owen
Apocalypse	Palmer
The Hour Before the Dawn	Yeats

(b) This Day and Age sel. S. Hewett

The following Poems :

As I came home from labour	Boden
The Fish	Bishop
The Pike	Blunden
The Serf	Campbell
The Son	Dyment
The Death of the Hired Man	Frost
Out, Out —	Frost
A Considerable Speck	Frost
Toads	Larkin
Wires	Larkin
All Day It Has Rained	Lewis, A.
A Hard Frost	Lewis, C.
Prayer Before Birth	Macneice
Xmas shopping	Macneice
For Johnny	Pudney
Missing	Pudney
To a Conscript of 1940	Read
H.M.S. Hero	Roberts
Thoughts in 1932	Sassoon
And Death Shall Have No Dominion	Thomas
The hand that signed the paper	Thomas
Prayer of a Black boy	Tirolien
Portrait of a Machine	Untermeyer
Request to a Year	Wright
Wreath Makers : Leeds Market	Kirkup
Horses on the Camargue	Campbell
Mountain Lion	Lawrence

(c) Poems For Pleasure Book 1

A. F. Scott (Ed.)

The following Poems :

PART I Section 1 Rhythm in Verse

Off The Ground	de la Mare
The Little Creature	de la Mare
The Song of the Quoodle	Chesterton
The Dong with the Luminous Nose	Lear
The Congo	Lindsay

Section 2 Pictures in Words

Moonlit Apples	Drinkwater
Ducks	Harvey
Winter	Shakespeare
Miss Thompson Goes Shopping	Armstrong
The Great Lover	Brooke

Section 4 The Poets Feeling

Old Woman of the Roads	Colun
Sea Fever	Masefield
The Dromedary	Campbell
The Bells of Heaven	Hodgson
O What if the Fowler	Dalmon

PART II Section 2 The Natural Scene

Pied Beauty	Hopkins
Flying Crooked	Graves
But	Lawrence
Snake	Lawrence
The Pike	Blunden

Section 3 Ballads Old and New

Sir Patrick Spens	
Get Up and Bar the Door	
The Rider at the Gate	Masefield

Section C. Plays

There will be two questions set on each of the five plays.

Macbeth	W. Shakespeare
The Boy With The Cart	C. Fry
The Government Inspector	N. Gogol
She Stoops to Conquer	O. Goldsmith
An Inspector Calls	J. B. Priestley

N.B. Any editions may be used

3. SPOKEN ENGLISH

Consideration of a candidate's ability will be based on (a) internal assessment (b) external examination.

Internal Assessment

This will be based on the work of the year preceding the external examination and schools are free to arrive at this assessment by any means they think appropriate. The internally assessed mark will not be made available to the external examiners until the examination is complete.

External Examination

As a general rule the examination should be conducted in the presence of a group of candidates, except where a school decides that this is not in the best interests of a particular candidate, when he shall be examined individually. The examination shall be conducted by two external examiners and will be in three sections :

SECTION 1

The candidate may undertake *ONE* of the following exercises :

either (a) Prepared passage from poetry, prose or drama.

The candidate will be asked to speak a prepared passage of his own choosing, which may be one of the following : a poem, prose or an excerpt from a play. The speaking must be of no more than two minutes duration. The candidate may read the material or speak from memory. In the latter case, he is allowed to have the script at hand. The examiners may initiate brief discussion on the chosen passage.

or (b) Unprepared reading.

The candidate will be invited to bring to the examination a book he has enjoyed. The examiners will then select from it a passage which the candidate will be asked to read aloud. The examiners may investigate any points which the reading has not made clear.

SECTION 2—*Personal Project*

The candidate is to prepare a talk of not less than three minutes duration on a subject of his own choosing. Brief notes in the form of topic headings may be used. On no account may the talk be read or recited. He may use appropriate visual and aural aids, e.g., charts, pictures, films, photographs, and tape recordings. The examiners will be prepared to assist the speaker with leading questions.

SECTION 3—*Conversation*

On the basis of the material presented under Section 2, the examiners will invite questions and lead discussion designed to test the candidate's ability to express his ideas without preparation. The examiners will encourage the participation of the listening group.

At the discretion of the school, in consultation where possible with a speech therapist and/or school psychologist, a candidate with a speech defect—e.g., stammering or cleft palate speech—may be excused from taking the Spoken English Examination in any of its parts. In this case his written marks will be scaled to allow for this deficient percentage.

4. COURSE WORK

Course work will be assessed by the teachers and subject to external moderation. For moderation purposes, a representative selection of the candidate's work during the two full terms preceding the Examination should be available for inspection. This work should be presented in a folder with an index giving the dates when the work was done.

Possible lines of work are :

- (a) reviews and other work arising from books, poems, and plays ;
- (b) original prose, verse, plays, and scripts for films ;
- (c) articles and reports ;
- (d) records and correspondence connected with personal projects and activities.

Teachers will have freedom to interpret the individual needs and interests of their pupils, and independent initiative and experiment will be welcomed.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 5

Geography
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

GEOGRAPHY (North)

(a) Paper I 2 hours duration plus 15 minutes reading time 33½%. (b) Paper II 2 hours duration plus 15 minutes reading time 33½%. (c) Course work 33½%.

Introduction

1. GENERAL

The Board believes that the broad aims of good geography teaching today are as follows :

- (a) The observation of natural and human landscapes including the recording of data and impressions and the seeking of explanations.
- (b) The use of source material.
- (c) A familiarity with maps and travel literature.
- (d) The ability to give expression to personal experiences.
- (e) The ability to differentiate between facts and generalisations.
- (f) A familiarity with world distributions.
- (g) An awareness of major human problems.
- (h) An awareness of the wonders of nature and natural processes.
- (i) An awareness of the changing nature of geography brought about by human activity.
- (j) The fostering of an interest which will extend beyond school life.

Ideally the child should do three things in the course of his school geographical studies :

- (i) Examine the neighbourhood in which he lives.
- (ii) Examine other comparable and contrasting regions of our own country.
- (iii) Examine regions of similarity and contrast in different parts of the world.

While a prime consideration has been to include material which is new, imaginative and appropriate to the present time, the Board has not lost sight of the fact that because a method is well-tried and traditional, it is not necessarily bad. It has also attempted to cater for a wide variety of methods and available facilities. The scope is wide in order that no one shall be excluded. At the same time encouragement is given to schools using progressive methods in the hope that these will one day be standard practice.

2. THE EXAMINATION

This syllabus is based on the assumption that, during the final two years of the pupil's secondary schooling, at least 2 hours per week is devoted to the subject.

While the first three years of the child's schooling are not directly examined, it is assumed that they will include a course of world geographical study forming an essential background to later work. Pupils should not only be able to use text-books and maps, but should be conversant with other media such as newspapers, periodicals, television and libraries. Opportunities are afforded for the examination of modern themes and studies of current interest.

3. PRACTICAL WORK

Practical work can take many forms, and the Board suggests that the course work folder might be (a) a field study of one or more aspects of a limited area either near the school or further away on a school visit, or (b) a local study of (say) 100 square miles around the school district, or (c) an assignment on a world topic, or (d) a combination of any of these. One should not lose sight of the fact that a school does not have to be in a National Park in order to do field study work. Very rewarding studies have been done in London's East End or on large housing estates. Similarly local studies can just as easily be urban in character as rural. Perhaps a combination of both is better still. Again the absence of a library does not preclude the assignment as an alternative. Newspapers, magazines, television and a variety of sources from which material can be obtained by post provide a means of producing suitable assignments.

The Board feels that geography without practical participation is not as meaningful as it might be. Pupils should be able to observe and interpret their observations as they live and work and move around. Personal experience is also a background against which to compare other lands, other people and their problems. While not attempting to dictate to teachers, the Board hopes that it has provided a framework within which children can enjoy a meaningful experience and teachers continue to indulge in their favourite methods and subjects.

4. PHYSICAL GEOGRAPHY

The Board feels that some acquaintance with the physical basis of our environment is desirable and that it should be applied in character, and not removed from other forms of geographical study. The main topics are, therefore, arranged in two lists. List A can most conveniently be taught in connection with the British Isles and List B in connection with World Geography. Some topics apply equally to both the British Isles and to World Geography, but it is considered more convenient to allocate the topics to one or other of the lists. Questions set specifically on Physical Geography on Paper I will refer only to topics in List A, while those on Paper II will be on topics in List B. It is not considered desirable that a study should be made of numerous rock types but chalk and limestone scenery are thought to be suitable for inclusion.

The following topics should be taught in connection with suitable areas :

List A	List B	
Coastal features	Deserts	Deltas
Glaciation	Lakes	Rift Valleys
Limestone and chalk scenery	Plains	Earthquakes
Rivers	Waterfalls	Volcanoes
Continental shelf	Islands	

Naturally, mention of items in List A should be made where appropriate in World Geography periods. Similarly, items in List B which apply to the British Isles should be treated in the same way.

Questions on items in List A may be set with reference to the Ordnance Survey map provided. Questions on both lists may be set with reference to photographs.

5. WRITTEN ANSWERS

Each of the examination papers will include some essay-type questions. The papers will be set in such a form as to cover the many different methods of approach in the teaching of the subject. Thus, in Paper I, some schools may prefer a regional approach while others adopt a topic method based on products or other suitable headings. For schools using

the regional approach it is not considered necessary to work systematically from Land's End to Lerwick, from Great Yarmouth to Galway, "doing" every little region in turn. It is considered more profitable to examine a smaller number of suitable contrasting regions. An acceptable list might be: (a) highlands (Scotland); (b) coastline (Cornwall); (c) intensive farming (Kent); (d) mixed farming (N. Midlands); (e) heavy industry (Tyneside); (f) conurbation (S. Lancashire). A survey of transport might act as the connecting link.

Schools adopting a topic method should choose a limited number of headings in the same way. While one teacher may prefer to study one continent in detail, selecting a limited number of areas to illustrate its typical industries, agriculture, climates, peoples and problems, another will prefer to study the world through a number of specimen products or climates. Another method which might commend itself, is to study two contrasting regions of the world, one a developing area, the other an area with an advanced economy. Teachers who like to relate their work to current affairs or world problems are also catered for.

With these points in mind, the questions will be carefully worded so that neither a specific region nor a continent is named. Instead the questions will be phrased so that, for example, an essay on wool production could apply equally to any of the continents or all of them. The words "Choose an area you have studied . . ." will be typical.

The same principle will apply in regional essays. The child will be required to "Choose a highland area you have studied . . ." or "Select a hot desert . . ."

In suitable cases essay-type questions will be set on maps, diagrams or statistics.

6. ASSIGNMENTS

Part III of the examination calls for the submission of a folder of individual work which may take the form of an assignment. For titles of assignments suggested—see Part III of the syllabus.

The folder should indicate that the pupil has used a variety of source material, has drawn logical conclusions from that material and has the ability to set down these findings sensibly and neatly. The finished product should be concise, informative and well-presented, and should be the child's own work. (The teacher's role is that of an adviser.) A wide variety of sources should be consulted and a full bibliography given. Marks will be awarded on the basis of reasoned geographical content and evidence of original observation or research will be sought.

While the Board does not set a length to the assignment, teachers should bear in mind that this work should fairly represent one-third of the work in geography done over the period covered by the examination work.

7. FIELD WORK

In the event of a field study being undertaken in Part III (Individual folder), the candidate need not submit the actual field note book. The material obtained should, however, be written up in suitable form and this folder submitted for examination. If an Ordnance Survey map is not included in the folder, the relevant 2½ in. sheet should be submitted with the work in order to help the examiner. In the event of a number of candidates submitting studies of the same area, one copy only of the map should be enclosed. Collections of photographs or specimens may be submitted if properly arranged and written up, and these will be returned to the school or candidate on request.

8. LOCAL STUDY

In the event of a local study being undertaken in Part III (Individual folder) the same conditions re collection apply as in (7) above.

9. EQUIPMENT

Candidates should provide writing implements, a good ruler, compasses, protractor, a school atlas (these may be used throughout Parts I and II) coloured (not yellow) pencils or inks.

10. TERMINOLOGY

Where applicable, place names will be given in traditional and modern forms where alternatives are commonly used. Candidates may use either spelling (i.e., Cologne-Köln). Where cities have been entirely renamed, modern names should be used (i.e., Djakarta). Alternative geographical terms will be accepted in all cases where applicable (cuesta or escarpment). Temperatures will be given in degrees F. and C. for the time being.

11. ORDNANCE SURVEY MAPS

These will be to a scale of 1:63360 from the 7th Series, and will normally be of an area outside that covered by the Board.

12. MAPS AND DIAGRAMS

These may be used to illustrate answers and need not be over elaborate so long as they give the relevant facts.

13. LAYOUT OF PAPER

The paper (in Parts I and II) will be in book form and will include no loose sheets (except the Ordnance Survey map). Certain questions, i.e., short answers and blank maps, will occupy a whole page and the page must be detached and tied to the answer book if the particular question is answered. Full instructions are given on each page and a piece of string will be provided. The candidate's name and number must appear on each sheet.

Each sheet of the question book is printed on one side only; where questions occupy more than one normal sheet, the question is printed across a double sheet which is folded into the book. Thus, the candidate need not turn over a page in order to refer to different parts of the same question. Blank map questions do not require pupils to write in names on the maps, instead an adjoining table is provided with spaces and reference numbers.

The paper contains a wide element of choice and, therefore, a large number of questions. The Board is concerned that the pupils are not forced to read the entire booklet in their search for questions which they can answer, so :

- (a) Each question has a distinctive and clearly worded heading so that pupils can ignore those which mean nothing to them.
- (b) The most important feature of the paper is that questions are arranged on a number of sheets or pages in the booklet and teachers may detach from the booklet, before the examination, those questions which are not in the school's syllabus. This reduces the amount of reading to be done, simplifies the pupil's choice and ensures that the pupils answer those questions for which they are prepared. This will reduce the problems faced by the child of lower ability particularly, and should help to overcome "examination nerves" to some extent. Many pupils do not produce their best work in the examination room because confusion leads them to choose unwisely from the paper. The contention that this procedure involves the teacher in the examination on the child's behalf is not valid if one agrees that the Board is trying to assess his or her geographical knowledge only, and not reading ability.

All instructions on the papers are printed fully and are in less formal language than is often the case. The Board hopes that this, too, will inspire confidence and clarity.

SYLLABUS

Photographs, maps and diagrams may be used as part of any question in both Papers I and II.

Each candidate will be given a sheet of paper, which will not be handed in, on which notes may be made during the reading time allowed.

PAPER I

Candidates will be required to attempt a compulsory map work question and any three other questions.

1. *Compulsory questions on Ordnance Survey map.* The emphasis will be on practical map usage, including grid reference, recognition of symbols and features, measurement of distance in a straight line and along routes, direction, description of landscape and journeys, intervisibility and land usage. Pupils may be asked to sketch simple outline maps to a given scale or may be given outline maps on which to add details.

2. *A Paper on the British Isles* to include questions on the following :

- (a) An outline map and short answers covering physical features, settlement and occupations.
- (b) Physical geography. The question may be related to the Ordnance Survey map. Topics to be coastal features, glaciation, limestone and chalk scenery, the work of rivers.
- (c) Weather. Methods of measuring and recording temperature, rainfall, wind and pressure. Weather map symbols. Typical high and low pressure patterns. Climate. General features of climate.
- (d) Agriculture. Pastoral, mixed, arable and market gardening. Distribution of farming in relation to climate, soil and market.
- (e) Fishing. Fishing grounds, types, methods, fishing ports and marketing.
- (f) Industry. Iron and steel, textiles, chemicals, shipbuilding, pottery, motor vehicles and food.
- (g) Transport. Road, rail, air and water with particular reference to modern developments.
- (h) Tourism. Study of regions with scenic, climatic and cultural attractions.
- (i) Sources of power. Coal, oil, gas, electricity, water power and nuclear power.
- (f) Regional essays. Specified by type, e.g., highland, coastal, industrial or two contrasting agricultural areas.
- (k) Local geography. A study of an area of a hundred square miles to include the school area.

PAPER II

Candidates will be required to attempt any four questions on the following sections of the syllabus :

- (a) An outline map of the world on which details to be marked and/or identified.
- (b) Short answer questions on the world as a whole to include all aspects of geography as covered in the following sections.
- (c) The earth as a planet. Longitude and time, seasons, length of day and night, planetary winds, ocean currents.
- (d) Physical geography to include deserts, deltas, lakes, rifts, plains, volcanoes, waterfalls, earthquakes and islands.
- (e) Climates and vegetation. Hot forests, hot grasslands, all types of deserts, monsoon lands, cool grass lands, Northern forests, deciduous forests, Mediterranean type, Tundra.

- (f) Products. (i) Food products (these will be varied every three years).
Wheat, rice, coffee, tea, sugar (cane and beet) and meat.
(ii) Raw materials. Iron, copper, bauxite, tin, wool, cotton,
timber and rubber.
One question will be set on (i) and one on (ii).
- (g) Sources of power ; coal, oil, water and nuclear power.
- (h) Geographical background of world problems and topics of current interest, e.g., population distribution, food supplies, diseases, communication development, power schemes, people, places and events in the news. (2 questions).
- (i) Regional essays. (2 questions).

PART III (Course work and individual folder)

This will include a local survey, or a field study (local or otherwise) or assignments or a combination of two or all.

The following headings of work being undertaken by members of the panel are examples of what would constitute an acceptable piece of individual work, and are intended for guidance only.

I. *Local Study* (arranged under the following headings)

- (a) Introduction to the area.
- (b) Relief and drainage.
- (c) Geology Basic and Drift.
- (d) Soils. (Soil testing suggested).
- (e) Natural vegetation.
- (f) Climate.
- (g) Communications.
- (h) Roads and road transport.
- (i) Early road systems.
- (j) Road systems today.
- (k) Railways.
- (l) Omnibus Service.
- (m) Settlement.
- (n) Population.
- (o) Agriculture (Old land use map).
- (p) Changes in farming.
- (q) Livestock.
- (r) Crops, arable and pasture.
- (s) Agricultural employment.
- (t) History of the area. (Pre-enclosure map) .
- (u) Local history and interests.
- (v) Flora and fauna. (Include specimens).
- (w) Conclusion.

In this study the 6 in. Ordnance Survey map has been used as the basic map. The standard of cartography is high.

Field sketches and diagrams should be included.

II. *Sample topic*—Dairy farming. Suggested chapter headings.

Local dairying, milk production, supplies, distribution, allied industries.

British Isles distribution, effect of climate, conditions necessary, transport problems, cattle, cheese and butter making by traditional methods, science and the dairy farmer, feed problems.

Competition from abroad: New Zealand, Canada, Denmark, Holland. Imports and exports.

Possible effects of political developments in Europe, the Common Market.

Materials might include plans, maps, models, photographs, reports of visits.

III. Sample topic—Mankind's need for water. Suggested chapter headings.

Local water supplies, methods of obtaining water, new sources of water.

Water in industry. Local and general.

Water on the farm.

Hydro-electric power, how it is obtained, some great power schemes, i.e., Kariba, uses of hydro-electric power, world distribution, advantages of hydro-electric power.

Irrigation, traditional methods in Africa and Asia, modern developments, large schemes of irrigation and their effect on communities. World distribution of irrigation and potential sources.

Artesian water.

Oases.

Land drainage schemes.

Other aspects.

GEOGRAPHY (South)

(a) Paper I $1\frac{1}{2}$ hours duration plus 10 minutes reading time 30%. (b) Paper II $1\frac{1}{2}$ hours duration plus 10 minutes reading time 30%. (c) Practical assessment 20%. (d) Course work 20%.

Introduction

If the work in geography is to be effective it must have reality: this will be best achieved by allowing the pupil to gain experience at first hand. To benefit from these experiences the pupil must have a grasp of the practical skills and techniques of the geographer.

Having been trained to make his own observations and recordings of geographical phenomena, to make deductions and draw conclusions from the evidence, the pupil will be better equipped to understand and use the observations and conclusions of others.

It follows that if a considerable part of a geography scheme of work is to be devoted to practical geography and the acquisition and improvement of geographical skills, an evaluation of the pupils' work must include some assessment of this part of the scheme and must not be limited to a conventional written examination which, all too often, merely involves the regurgitation of facts.

SYLLABUS: PRACTICAL AND GEOGRAPHICAL SKILLS

PART ONE

1. The candidate will be expected to show evidence that he has made a personal study at first hand of some aspect of his natural environment (landscape, sea or sky) or of the human activity affecting life in a particular environment (industries, building, communications, agriculture, fishing, etc.).

It is not expected that the candidate will produce a learned treatise: nor is an artistic scrap-book required. The main criterion should be that the study has been made at first hand. Credit will be given for neat presentation but this should not be allowed to over-weigh true geographical considerations. (See Appendix A.)

2. The candidate will be expected to have some elementary skill in the following:

(a) Map reading (with particular reference to the Ordnance Survey 7th series 1 in. and $2\frac{1}{2}$ in. scales).

To be able to orientate a map, have knowledge of distance and scale, recognise obvious natural and man-made features, relief, vegetation, simple land-use and to be familiar with the National Grid (not as an

academic exercise but in order that he may communicate with others). N.B. It is emphasised that these are the basic skills of Map Reading. A distinction is made between these skills and the interpretation of particular maps which is more properly related to studies of selected regions of the British Isles (or other countries).

(b) Maps and diagrams.

To understand common methods of representing geographical information (distributions, statistics, etc.).

(c) Personal observations and recording.

To have followed at least one practical activity of a geographical nature during the two years preceding the examination (see Appendix B).

(d) Photographic interpretation.

To be accustomed to examining photographs depicting geographical phenomena and to be able to comment intelligently upon their geographical significance.

(e) Geographical reference material.

To be accustomed to handling some of the sources of geographical information such as Gazetteers, various atlases, newspaper articles, "The Statesman's Year Book", "Whittaker's Almanac", "Pear's Cyclopaedia", Air-Line Timetables, Shipping Lists, A.A. and R.A.C. Handbooks and others.

(f) Background—Wider reading and film interest.

To be familiar with some travel literature and visual material. It is emphasised that it is not the intention to 'set' books for study, but candidates should be aware of the wide variety of travel books which give geography realism and enjoyment. The candidate should be prepared to discuss his impressions of books which he has chosen to read and films which he has seen.

PART TWO

Section I. *The British Isles*

1. Candidates will be expected to have a background knowledge of the British Isles with particular reference to physical features and climate, the chief industries including agriculture and fishing, the sources of raw materials and power, and the distribution of population and communications.
2. Candidates will be expected to have studied in greater depth a number of topics or aspects of life in selected regions of Britain. These should be studied in conjunction with the relevant Ordnance Survey and other maps and photographs.

Regions for this deeper study will be changed annually, thus :

1966	Lower Thames Basin	Central Valley of Scotland	Industrial North-East	Highlands of Scotland	East Anglia
1967	Lower Thames Basin	Lancastria	South Wales	Lake District	Hampshire Basin
1968	Lower Thames Basin	The Midland Triangle	The West Riding of Yorkshire	The Pennines	The South-West Peninsula
1969	Lower Thames Basin	Central Valley of Scotland	Industrial North-East	North Wales	The Weald
1970	Lower Thames Basin	Lancastria	South Wales	Highlands of Scotland	East Anglia

Section II. The World

1. Candidates will be expected to have a systematic background knowledge of the World at a fairly elementary level since this is regarded as being essential to any understanding of the World's problems. They must be aware of the major economic and political problems which both link and divide the activities of mankind.
2. To give world geography reality it is necessary that the candidates study parts of the world in more detail. This will be done by choosing for study at least two topics of world significance which are of intrinsic interest to a teenager. To allow the candidate to develop as wide a view as possible, the chosen topics should contrast climate, economic development and political alignment. The Board consider that it is desirable that candidates (and those responsible for their studies), should be given as wide a choice as possible in determining the lines of study which these topics should follow. For this reason, the only stipulation will be that one topic should embrace A DEVELOPED AREA OF THE NORTHERN HEMISPHERE, and the other topic AN UNDERDEVELOPED AREA OF THE SOUTHERN HEMISPHERE. The size of the area will depend upon the intensity or depth of the study. A detailed localised study should be thoroughly representative of a larger region.

The topics may be connected with or developed from physical or historical background, economics, agriculture, industry, transport, power, human societies, etc., etc., but in all cases there should be an opportunity for sample study in depth so that candidates may relate the way of life and the problems of real people to their total environment.

COURSE WORK 20%

Work done in class, in notebooks or otherwise, as the steady regular work carried out as part of the teaching/learning process. This work will be marked by the teacher and these marks kept as a record of the pupil's general work over the two years of the course.

Included in this course will be any special projects, topics, personal study, field work, etc.

The Board will determine the date by which individual studies should be completed. After a reasonable period the candidates' Geography teacher will be required to have completed his assessment of its value. He will have received a marking scheme to guide him in this.

PRACTICAL EXAMINATION 20%

Well before the period for practical tests the teacher will receive the question paper and a list of materials he will need to acquire for the conduct of the tests.

The school will be responsible for informing the Board (having previously been supplied with the address of the Moderator) of the date and time on which the examination will be held. The Moderator will attend the examination in some schools so that he may gain an informed impression of the examination in order that he may better moderate the final results.

1. The candidate will be required to answer a question set by his geography teacher on some aspect of his personal study. For this he will be allowed to use his Field Note-Book and other papers.

The teacher will be given guidance in setting the question through the specimen papers to be published by the Board. In general terms, the question should be such that the candidate will be required to draw simple conclusions and make reasoned deductions from his work. Questions merely requiring the presentation of fact will be avoided.

In schools where candidates have followed different studies this will mean that each candidate will receive a different question: in other schools where candidates have been working on a group arrangement they will all answer the same question. Worked scripts will be sent to the Board who may also require to see the Field Note-Books.

2. The candidate will demonstrate his proficiency in the basic skills by undergoing a short oral test conducted by his teacher. The tasks to be performed and questions asked will be set by the Board.

1 and 2 will be assessed by the teacher who will follow the guidance of a marking schedule. On the complete mark sheet the teacher will add his own assessment of the candidate.

WRITTEN EXAMINATION

Paper I. The British Isles

Candidates must answer all questions.

Question 1. This will be based on an extract of an Ordnance Survey map of 1 in. or $2\frac{1}{2}$ in. scale, and will be linked with one of the regions prescribed for study during a particular year.

Questions 2, 3, 4. With each question candidates will be given some geographical information in the form of a photograph, a map, statistics, etc. From this starting point each question will be divided into sections of graded difficulty.

Between them, the three questions will cover the remaining special regions of the British Isles and may test general background.

Paper II. The World

Candidates must answer 4 questions. (There will be some choice with Questions 2 and 3.)

Question 1. This question will be based on a map and will test general world geography.

Questions 2, 3. A wide choice of questions will be set in TWO sections:

- (I) Developed areas of the Northern hemisphere.
- (II) Underdeveloped areas of the Southern hemisphere.

Candidates will be required to answer ONE question from EACH section.

Within each section the choice of question will allow each candidate to:

- (a) Demonstrate what he knows rather than test what he does not know.
- (b) Particularise rather than generalise.
- (c) Relate his knowledge of contemporary life in a particular area to the problems of today.

Question 4. This question will require candidates to compare or contrast a developed area with an underdeveloped area.

(Specimen examination papers (to be published shortly) will show in greater detail the pattern and type of questions to be set.)

Appendix A

This is work done outside the classroom either in the school area, the home area of the pupil, or at some centre where the pupil has stayed on holiday or as a member of a school group or school camp.

The basic requirements should be that the candidates produce written evidence in the form of a well-prepared note book giving an accurate record of two items.

1. At least one properly conducted field excursion involving practical studies of land forms, drainage patterns, natural vegetation, land use and settlements in a rural area.

The teacher must certify :

- (a) That a reasonable proportion of the study was carried out by actually walking over the area.
 - (b) That the record truly reflects the work actually carried out in the field.
 - (c) That in the course of the field study the candidate was able effectively to read and make practical use of Ordnance Survey maps on the 1 in. or 2½ in. scales for :
 - (i) following a pre-arranged route ;
 - (ii) recognising features shown by conventional signs ;
 - (iii) giving six-figure map references to positions on the ground.
2. At least one piece of individual work on a topic of local geography such as a study of a local factory or farm, or of public services such as water supply or transport. The term 'local study' may be widely interpreted, and the actual topic will be chosen by the candidate in consultation with the teacher, who will be required to certify that the study is the original work of the candidate—though this is not meant to imply that the candidate cannot seek guidance on the selected study from the teacher or from other sources. All sources of material must be clearly described or specified.

Appendix B

PRACTICAL ACTIVITIES FOR OBSERVATION AND RECORDING

1. To know how to observe and record temperature, humidity, rainfall, wind force, wind direction and visibility. To have experience of the running of a small weather station. To have an elementary knowledge of weather maps and the terms depression, anti-cyclone, warm and cold fronts.
2. The making of a simple survey, e.g., a plane table survey of a small or distinctive area not exceeding one acre.
3. A study of land utilization in an area of (say) two square miles, to include accurate plotting of information on a 6 in. plan.
4. Preparation of a collection of objects or specimens together with accurate mapping of their sources and written notes on their formation or structure or economic value, e.g. :
 - (a) common building stones,
 - (b) common raw materials which are mined for industry,
 - (c) common raw materials which are grown for food or industry.
5. Other practical activities specifically approved by the Board.

East Anglian
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SECTION 6

*Handicraft
Syllabuses
1966*

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

HANDICRAFT

Two subjects, Metalwork and Woodwork, are included under this heading, but as certain common principles apply to both subjects they are grouped together. The actual syllabus in each of the subjects should, therefore, be read in conjunction with the relevant matter which applies to both.

HANDICRAFT (North)

(a) Course work 50%. (b) Practical test 3 hours duration 30%. (c) Written paper 1½ hours duration 20%.

The Board believes that Handicraft affords an essential balance to the academic side of the curriculum and that it gives much to its pupils which cannot be measured. It would be difficult, for example, to measure creative experience, confidence, motivation, or the invigoration which handicraft so often brings to secondary education. It is possible, of course, to make some objective appraisal of both manual skill and craft knowledge, and this is the primary aim of the syllabuses and examination schemes. The syllabuses do not represent all that would be expected to be taught during a normal five-year secondary course but comprises ground which would be common to any competent scheme of handicraft without restricting the scope of the individual teacher.

The importance attached to course work is shown by the allocation of 50% of the total marks to it. This will be internally assessed but externally moderated, since it is evident that the teacher himself would be best able to judge the total contribution each pupil has made, and to appraise those qualities developed by handicraft which no examination could hope to measure, e.g., independence, resource, persistence, foresight, effort and industry. The handicraft teacher would have ample freedom to develop this section in any way he thought best. This would allow the candidate to put forward, in addition to examples of craft work, such things as projects, extended essays, design folders, or any other special avenues of study such as boat-building and foundry work.

The examinations require no formal woodwork or metalwork drawing but the ability to read and understand a drawing will be implicit in the practical test.

One other aspect of handicraft which is vitally important is that of consumer education. It is mainly in the school workshop, where materials are handled and studied, and where creative design and manufacture is an inherent part of the curriculum, that the training of taste and discrimination can be successfully undertaken. The acid test of the design and manufacture of consumer goods is functional efficiency. Order and beauty surely follow where function is pre-eminent. Aesthetics alone cannot be the sole criterion of design in this context although none would deny its necessity.

COURSE WORK

Marks will be awarded by the handicraft teacher during the final year and will carry 50% of the total examination marks.

PRACTICAL TEST

The practical test will require the candidate to complete a piece of work from a given drawing, which will be in orthographic projection; a pictorial view of the finished job will also be given.

CRAFT KNOWLEDGE PAPER

The craft knowledge paper will be in two sections, carrying equal marks :
Section A will consist of 30 questions requiring short answers and/or sketches.

Section B. Candidates will be required to attempt two questions out of six which will be set and which will require more detailed answers. The questions will have a marked practical bias based on the pupil's experience in the school workshop.

SYLLABUSES

METALWORK (North)

PRACTICAL TEST

The test will require skill in some of the following :

1. Measuring, marking and testing.
2. Sawing.
3. Chiselling.
4. Filing.
5. Drilling.
6. Rivetting.
7. Tapping and screwing.
8. Folding and seaming.
9. Simple hollowing.
10. Planishing.
11. Soldering (hard and soft), brazing.
12. Forgework, including hot and cold bending, simple scroll work, drawing down, twisting and simple upsetting.
13. Heat treatment—annealing, hardening and tempering.
14. Case hardening.
15. Finishing and protection of metals.
16. Turning with chucks and between centres.

CRAFT KNOWLEDGE PAPER

The questions will require a knowledge of the following :

1. Safety precautions.
2. Recognition of the metals and alloys commonly used in the school workshop, a knowledge of their normal applications and appropriate finishes.
3. The order of procedure in making simple articles.
4. The heat treatment of metals, hardening, tempering and case hardening.
5. The care and use of hand tools found in the school workshop.
6. The care and use of machines in the school workshop.
7. The basic processes of setting out, sawing, chiselling, filing, drilling, rivetting and the use of taps and dies.
8. The processes of hollowing—sinking—raising and planishing.
9. Soft and hard soldering, brazing and welding.
10. Forgework, including hot and cold bending, simple scroll work, drawing down, twisting and simple upsetting.
11. Lathe work : the use of the three and four jaw chuck, face plate, lathe cutting tools, precision measuring instruments, the cross slide and compound rest ; turning between centres, parallel turning, drilling and knurling.
12. The elementary principles of casting.

WOODWORK (North)

PRACTICAL TEST

The test will require skill in the following :

1. Planing.
2. Sawing.
3. Grooving.
4. Screwing.
5. Nailing.
6. Chiselling.
7. Simple shaping.
8. Drilling and boring.
9. Common joints and constructions listed in the content of the craft knowledge paper.

The use of machinery will not be permitted.

CRAFT KNOWLEDGE PAPER

The questions will require a knowledge of the following :

1. Safety precautions.
2. The correct use and care of tools normally used in the workshop.
3. An elementary knowledge of the characteristics of hardwoods and softwoods generally used in the school craftwork.
4. The chief uses of plywood, laminated board, and blockboard, etc.
5. Some knowledge of adhesives.
6. An ability to select the correct sizes of common nails, screws, fastenings and fittings for elementary work.
7. The chief purposes of the common joints and their uses in basic constructions. Housings—stopped and through. Halvings—cross and tee. Mortice and tenon—through, stopped and haunched. Dovetail—through and lapped. Bridle.
8. The order of procedure in making simple articles.
9. Methods of preparation and finishes in timber.

HANDICRAFT (South)

(a) *Planning paper* 2½ hours duration with 5 minutes reading time plus 30 minutes for tracing and practical work of 5 hours duration 40%. (b) *Written paper* 1½ hours duration with 5 minutes reading time 20%. (c) *Course work* 32%. (d) *Topic book* 8%.

- (a) In the planning paper the functional objectives of simple articles will be given. There will be a limited choice of elementary planning problems and candidates will be asked to produce the necessary formal drawings and/or dimensioned sketches for submission to the Examiner. They will be expected to discriminate and make decisions. The purpose of the planning part of this examination is to provide the candidate with a challenging situation, emphasizing his need to make judgments on simple processes and constructions within his technical ability, relating them to fitness for purpose and appearance.
- (b) To relieve the stress of working against time, the practical test will be of 5 hours duration spread over not more than two sessions. Within this period the teacher can arrange for flexibility in the use of specialised equipment.

- (c) There will be a theory paper in which all the questions will be related to the experiences likely to have been gained in the school workshop. Some general background knowledge will be required.
- (d) The course work will be assessed and consideration given to a topic book consisting of the candidate's own study of some aspect of a related craft.

PLANNING PAPER

The first part of this section will be conducted under examination conditions and candidates will be required to design a simple article to fulfil a given purpose. They will be expected to make some of the decisions on simple processes and to exercise discrimination on constructions and appearance.

2½ hours will be allowed for the planning paper and candidates will produce formal drawings and/or sketches for submission to the examiner. The invigilator will then allow up to 30 minutes to enable candidates to make tracings of their working drawings and a copy of the list of materials. These will be retained at the school for use in the practical examination.

Wherever possible there will be a choice of useful articles for the practical work and the finished product could be made available to the candidate after it has been assessed.

PRACTICAL WORK

Candidates will be allowed 5 hours of workshop time, in not more than TWO sessions, in which to make the article they have planned. Necessary modifications may be made by the candidate.

At the discretion of the invigilator, the candidate may be allowed a second piece of material, but the spoilt material must be submitted with the finished work.

Metal and timber may be prepared to width and thickness by the candidate before the practical examination.

THEORY PAPER

The paper will be in two parts. *Section A* will have 15 questions, 4 marks to be awarded for each. *Section B* will consist of 4 or 5 questions from which TWO will be chosen, 20 marks will be awarded to each.

COURSE WORK

This is work produced by the candidates during normal workshop time before the examination, and should preferably be their own choice. There will be no restriction in either form or time, but the work, in any state, should be available for assessment by the Easter prior to the examination.

It is to be hoped that evidence of planning in the form of working drawings will be available.

TOPIC BOOK

This should take the form of either a study of a particular aspect of a related craft, or research carried out in connection with their course work.

It should consist of not less than 1,000 words and be produced in the candidate's own time.

SYLLABUSES

METALWORK (South)

1. Metals and alloys commonly used in the school workshop and a knowledge of their normal applications.
2. Simple heat treatment; hardening, tempering, case hardening and annealing.
3. The care and use of hand tools found in the school workshop.
4. Knowledge of the basic processes of setting out, sawing, filing, chiselling, drilling, rivetting and the use of taps and dies.
5. Hollowing, sinking, simple raising and planishing.
6. Soft soldering, silver soldering and brazing.
7. Forgework, including hot and cold bending, simple scroll work, drawing down, twisting and simple upsetting.
8. The use of the drilling, grinding and polishing machines.
9. Lathework; simple lathe operations including the use of 3 and 4 jaw chucks, parallel and short taper turning, facing, drilling, knurling and turning between centres.
10. Any other applications in metalwork, such as casting and welding, etc., where the facilities exist.
11. Elementary planning problems and methods of procedure, including the ability to read a working drawing.
12. Appropriate surface finishes for metals.
13. Use of the micrometer.
14. Safety precautions in the metalwork room.

WOODWORK (South)

1. The correct use and care of the tools normally used in the school workshop.
2. An elementary knowledge of the characteristics of hardwoods and softwoods. Defects in timber and precautions against deterioration.
3. Natural and artificial seasoning, conversion, effects of heat and moisture, methods of storing.
4. The chief uses of manufactured board and plastic facings.
5. A knowledge of and uses of the variety of timbers usually found in the school workshop.
6. An ability to select the correct size and type of nails, screws and fittings for elementary work.
7. Knowledge of glues and adhesives for interior and exterior work.
8. The chief purposes of the common joints and their use in basic constructions.
9. Elementary planning problems and methods of procedure including the ability to read a working drawing.
10. Common wood finishes for soft and hard woods.
11. Any other applications or processes in woodwork, such as veneering, inlaying, wood turning, treening and carving where the facilities exist.
12. Safety precautions in the woodwork room.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 7

History
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

HISTORY (North)

(a) *Written paper* 2½ hours duration including 10 minutes reading time 70%. (b) *Course work* 30%.

INTRODUCTION

1. The History Syllabus consists of 16 sections, as follows :

- SECTION A. Ancient Civilisations and Roman Britain to A.D. 410.
- SECTION B. Medieval History up to 1453.
- SECTION C. Early Modern History 1453-1783.
- SECTION D. Early Modern History 1789-1914.
- SECTION E. British, European, and World History 1870-Present Day.
- SECTION F. History : 1870-Present Day.
- SECTION G. Economic and Social History 1066-1688.
- SECTION H. Economic and Social History 1640-Present Day.
- SECTION I. History of Science.
- SECTION J. History of Building.
- SECTION K. History of Agriculture.
- SECTION L. History of Industry and Commerce.
- SECTION M. History of Communication.
- SECTION N. The Development of the English Political System from Saxon Times to the Present Day.
- SECTION O. A History of the British Commonwealth of Nations.
- SECTION P. World Problems.

2. Candidates will offer themselves for written examination in one only of these sections. The type of question paper will be the same for all the sections, and will be designed to reveal the candidates' knowledge rather than search out their weaknesses .

3. The Board's decision to offer a large number of alternative sections was based on the consideration that the syllabus must reflect the interests and abilities and the social and economic environment of pupils living in a large area with many widely-differing local and regional characteristics, and must also take into account the varying special knowledge, enthusiasms and aims of the history teachers involved.

4. It is not envisaged that preparation for the examination should begin before the fourth and fifth years.

THE WRITTEN PAPER

1. This will be in two parts :

- (a) Part I. Questions requiring brief answers carrying 20% of the total marks.
- (b) Part II. Questions requiring more involved answers carrying 50% of the total marks.

2. Part I will consist of about 30 questions, ranging over the whole syllabus section. 30 minutes will be allowed, and candidates should attempt to answer all the questions. Answers to direct and multiple-choice questions will be required, and the candidates' knowledge of maps and chronology will be tested.

3. Part II will contain 20 questions, ranging over the whole syllabus section. Four answers are required and two hours will be allowed, of which ten minutes is to be devoted to reading. Candidates will be required to attempt :

- (a) two out of eight questions requiring answers in the form of essays ;
- (b) a further two out of twelve questions consisting of map-work, comments on illustrations and on short passages taken from original, secondary and textbook sources.

COURSE WORK

1. Each candidate is required to produce a booklet or folder, consisting of some 2,000-3,000 words on a historical topic, plus illustrative material if appropriate. The final form and content of the booklet should be the candidate's own work, but teachers should feel quite free to give advice and assistance, particularly in the early stages of preparation.

2. No limits are set for the choice of topic. There is no requirement that candidates in one class or school should each choose a different topic. Panel and moderators may request the submission of titles, not for approval, but for information.

STANDARDS

No candidate who fails to satisfy the examiners in Course Work and each of the two parts of the written paper shall be awarded a Grade 4 or higher certificate in History.

SECTION A. ANCIENT CIVILISATIONS AND ROMAN BRITAIN TO A.D. 410.

Though remote in time this period is not necessarily remote from modern experience. Since people started living together in cities they have had to face similar problems, inherent in many people living together. Organisation of government, ideas of religion, production, communication, desire for expansion by union or domination, have always had to be considered. Many of the ideas of Ancient Civilisations although different from ours, have a contemporary significance. The past is not finished and should still be relevant.

This syllabus does not attempt to go into the details of any one civilisation, even where such detailed history is known. It is not the aim that candidates should spend their time learning names from Egyptian King lists, or from a table of Roman Emperors, but where possible this syllabus should be taught through famous people of the past.

The section concerning Roman Britain is rather different, being a detailed study of a province which one could hardly call civilised. But many children have a keen interest in the history that lies below the ground and can build in their minds through it a vivid picture.

1. *Ancient Times*

- (a) *Factors leading to development of civilisations*—soil fertility, division of labour, leisure, living in cities, government development of written language, religion—source of information concerning past civilisations.
- (b) *Egypt*—The Union of the Kingdoms—Pyramid Age—Middle Kingdom—New Kingdom—Religion—Writing—Mathematics—Science.
- (c) *Land of the Two Rivers*—The City States Ur—Ur Nammu—Hammurabi—Writing—Religion—Government.
- (d) *Early China and India*—The Hwangho and the Yangtse—Confucius—Harappa and Mohenjodare—Buddha—Rise of Hinduism.

- (e) *Mediterranean Trade*—Crete's position—its civilisation—Phoenicia—Mycenae—Writing—Religion.
- (f) *Greece*—The City States—Wars against Persia—Classical Greek Civilisation especially Athenian—Philosophers, sculptors, dramatists, etc. Alexander the Great and the spread of Greek ideas—science.
- (g) *The Rise of Rome*—the organisation of the Republic—The Empire—its greatest extent—Government of the Empire—Christianity in the Empire.

2. *Roman Britain*

- (a) Conquest (including Caesar's Invasions).
- (b) Boadicean Revolt.
- (c) Work of Agricola.
- (d) Hadrianic and Antonine Walls.
- (e) Organisation of the army—the Government.
- (f) Towns—villas—roads—industries—coinage.
- (g) The end of Roman Britain.
- (h) The remains of Roman Britain.

3. *The Ancient Civilisations and Us*

Ideas from the Ancient World which have been accepted or rejected by the people of Modern Times.

SECTION B. MEDIEVAL HISTORY UP TO 1453

The aim of this syllabus is to encourage a wide study of Europe of the medieval period. The span of time is so great, however, that it would be impossible to include more than a representative selection of topics. Study around these would be useful but questions will be centred only on those people and events specifically mentioned. The sections are meant to be of equal weight.

A candidate should have a working knowledge of the main problems, events and movements as listed below; which form a general background to developments in Modern Europe. The chief aim, however, should be to arouse interest in medieval history for its own sake.

1. *Europe at the end of the Roman Empire*

- (a) Barbarian Kingdoms, Vandals, Ostrogoths, Burgundians, Visigoths, Franks.
- (b) The Carolingian Empire.

2. *Invasions of England and Norman Conquest*

- (a) Anglo-Saxon Settlements.
- (b) Conversion of England to Christianity.
- (c) Alfred and the Danes.
- (d) Organisation of government pre-conquest.
- (e) William the Conqueror and Domesday Book.

3. *Medieval European Kingdoms*

- (a) The Holy Roman Empire.
- (b) France—Philip Augustus, Louis the Pious—100 years war.
- (c) Spain and Portugal—re-conquest from Moors.

4. *Post-Conquest England*

- (a) Development and decline of feudal system to 1453.
- (b) Wales and Scotland in relation to England.

5. *Papacy in Medieval Europe*

- (a) Gregory the Great, St. Boniface, Leo IX.
- (b) Empire versus Papacy. National disputes.
- (c) Innocent III.
- (d) Schism and Conciliar Movement.

6. *Western Monasticism*

- (a) Monasteries before St. Benedict.
- (b) St. Benedict.
- (c) Monastic growth—Cluny, Citeaux, Carthusians.

7. *Europe and Islam*

- (a) Eastern Roman Empire.
- (b) Mahomet and spread of Islam.
- (c) The Crusades—fall of Constantinople.

8. *Trade and Exploration*

- (a) Contact with the East—Carpini, Rubruquis, Marco Polo.
- (b) Italian merchants—bankers.
- (c) Hanseatic League—Merchants of the Staple.

9. *Art and Architecture*

- (a) Byzantine—monastic—Carolingian.
- (b) Saxon Building—wood and stone.
- (c) Norman—Bayeaux Tapestry—New Building techniques.
- (d) Gothic—stained glass—building.
- (e) Italian artists and architects.
- (f) Other European artists and architects.

SECTION C. EARLY MODERN HISTORY 1453-1783

The aim of this syllabus is to provide the pupil with some awareness of the birth of modern Great Britain and the growth of the country's relationship with the rest of the world.

The syllabus is divided into four parts. The first is intended to provide a chronological backbone, emphasising the establishment of the rule of law through elected representatives, restricted though that electorate might be. It would be useful to develop this part in the form of a time chart with the main constitutional changes clearly defined. Thus there would be provided an outline of the development of government from feudal anarchy, through near despotism to responsible, though limited, parliamentary democracy as well as pegs on which to hang the facts and concepts of the remaining sections.

The more important parts are (2) Expansion of Outlook and (4) Social Conditions, emphasising the change from the cloistered, limited outlook of the Middle Ages to the beginnings of the age when all seemed possible to homo sapiens.

The headings of Part 3, Great Britain and Other Countries, are self-explanatory. It would be educationally and historically valueless, even if it were viable, to study Great Britain in isolation; on the other hand detailed understanding of trade agreements, foreign relationships, lists of battles and alliances are outside the scope of this syllabus. This part of the syllabus calls for an understanding of broad outlines, related to dramatic persons and incidents, in the surge and sway of the growth of British power. To a certain extent this part duplicates much that is covered in the other three sections, yet is deserving of its own development.

1. *Political History*

Establishment of the Rule of Law and the development of constitutional government in England.

(a) *King v. Over-mighty subjects*

Wars of Roses. Henry VI. Margaret of Anjou. Edward IV. Warwick. Richard III. Henry Tudor.

(Emphasis on struggle for power.)

(b) *Alliance of Monarch and Middle Class*

Henry VII and use of private courts, stability. Henry VIII : establishment, stability and use of Parliament to achieve such ends as the dissolution of the monasteries. Elizabeth and alliance with rising families. Establishment of a nation and new rivalries.

(c) *Parliament v. King*

James I, Charles I, Protectorate. Charles II, James II, Glorious Revolution.

(Emphasis on in whose hands ultimate power should lie.)

(d) *Growth of Constitutional Monarchy*

Whigs and Tories. William and Mary. Anne. George I, Walpole, Cabinet. George II. George III early reign.

2. *Expansion of Outlook*(a) *New Geographic Discoveries*

Portugal, Spain, England, France, Holland. Growth of rivalries for Trade and Colonies. New World—Spanish colonies and English Trade. Establishment English colonies. Rivalry with French in North America. Results of Seven Years' War. India—Rivalry with French. Clive, Arcot, Plassey. Effects of these discoveries on life and trade generally. Pacific—Captain Cook.

(b) *New Discoveries—Science*

Effect of gunpowder on land, sea, housing, weapons, power of monarch. New building materials, techniques. New clothing, fashions, habits. New furniture. Effect of printing on learning, attitudes, schools. Beginning of scientific method. Galileo, Copernicus, Bacon, Ray, Boyle, Newton, Halley. Royal Society. Beginning Agricultural Revolution ; Industrial Revolution.

(c) *New Attitudes*

Renaissance—English Art, Painting, Music. Reformation—Protestants, Puritans.

3. *Great Britain and Other Countries*

(a) 1454—End of attempt to establish a European Empire. Ireland—Henry VIII, Elizabeth, Cromwell, Jacobites, 1802. Scotland—End of importance of Medieval border struggles with Flodden. Mary, Queen of Scots, James I, Union 1707, Jacobite Rising 1715, 1745.

(b) *Trade and Alliances*

Henry VII. Henry VIII. Mary Tudor. Elizabeth—Spain, Spanish Netherlands, Spanish Colonies. James I—Spain, Thirty Years' War. Holland—Navigation Acts. Dutch Wars.

(c) France—Second 100 Years' War. King William's War. Spanish Succession. Austrian Succession. Seven Years' War.

(d) War of American Independence. Effects of conquest of Canada. Stamp Act. Boston. Declaration of Independence. Washington. Lafayette. Peace of Paris.

4. *Social Conditions*

- (a) Living standards at end of Middle Ages. End of War of Roses. Sheep and Enclosures. Effects of dissolution of monasteries. Sturdy Beggars. Growth of Yeoman.
- (b) Tudor Prosperity. Poor Law. Wider choices food, drink, garments. Town life and amusements 1665, 1666.
- (c) Growth of communications, ideas and transport. Shipping, roads, pamphlets, papers, ability to read and write.
- (d) Domestic Industry—Early effects Agricultural Revolution and Industrial Revolution. Medicine and expectation of life.

SECTION D. EARLY MODERN HISTORY 1789-1914

The aim of this section is to survey the 19th Century in a national, European and, in a small way, world setting. In that context, the amount of material is so vast that it has been necessary to be selective. Each paragraph has a particular theme, and it is intended that work should be centred round these themes. The paragraphs are intended to be of equal importance for examination purposes.

1. *The Age of Revolution and its aftermath*

- (a) French Revolution and Napoleonic Wars.
- (b) Revolutions of 1830 and 1848.
- (c) Parliamentary Reform in England—1832, 1864, 1882.

2. *Nationalism*

- (a) Germany—Metternich, German Confederation, Bismarck.
- (b) Italy—Carbonari, Cavour, Garibaldi.
- (c) France—Napoleon I, 2nd Republic, 2nd Empire, 3rd Republic.
- (d) America (U.S.A.)—Civil War and 19th Century Expansion.

3. *Socialism*

- (a) Louis Blanc, Marx and Lasalle, Lenin.
- (b) Growth of British Labour Party.
- (c) Growth of Trade Unionism.

4. *Economic Development*

- (a) Agriculture—Enclosures and Corn Laws.
- (b) Industry—changes in methods of production.
- (c) British Industrial Supremacy—Navigation Acts, Shipping Export Expansion.
- (d) Free Trade—Decline of Laissez-faire.

5. *Social Evils and Reform*

- (a) Factory and Public Health—Slums, Cholera, etc.—Shaftesbury, Oastler, Chadwick.
- (b) Poor Law and Social Insurance—Speenhamland, Chadwick, Lloyd George.
- (c) Prisons and Hospitals—Howard, Fry, Pasteur, Lister, Nightingale.
- (d) Slavery—Wilberforce, Clarkson, 1807 and 1833 Acts.
- (e) Education—Dame Schools, Ragged Schools, Monitorial System, 1880 and 1890 Acts.

6. *Paternalism and Imperialism*

- (a) Colonial and Dominion Expansion—Canada, Australia, South Africa, New Zealand.
- (b) India and the Far East.
- (c) The Scramble for Africa.
- (d) U.S.A. in South America and the Pacific.

7. *The End of an Era*

The Coming of the 1st World War—Colonial competition, Alliances and Military Rivalry—Crises.

SECTION E. BRITISH, EUROPEAN AND WORLD HISTORY, 1870 TO THE PRESENT DAY

This section contains an outline of the political, social and economic events of the last hundred years, with special emphasis on the 20th Century. It deals with some important aspects of British history, seen in a steadily widening context of European and world affairs.

It is suggested that Part 1 of this syllabus be treated along the lines of development indicated, rather than through the work of the consecutive ministries of the period.

1. *Britain*

- (a) Franchise and the reform of Parliament, 1867 to present day.
- (b) Ireland : the struggle for Home Rule.
- (c) Trade Unionism : industrial and political aspects.
- (d) Development of the political parties.
- (e) Education : Forster to the present day.
- (f) Social Welfare and the State.

2. *Britain and Europe*

- (a) 19th century Imperialism and Nationalism : Italian Unity ; Balkan Nationalism ; the German Empire ; the scramble for Africa.
- (b) The Approach of War : International rivalry ; the Balance of Power ; arms race ; successive crises.
- (c) First World War : Its nature and its cost.
- (d) The Search for Peace : Peace Treaties ; the concept of the League of Nations.
- (e) Social, Economic and Political Consequences of 1st World War : Acceleration of social change in Britain ; Revolution in Russia ; Fascism in Italy ; Nazism in Germany ; Inflation in U.S.A. ; the World Economic Crisis.
- (f) Renewed Threats to Peace ; the Breakdown of the League : Sino-Japanese hostility ; Mussolini and the Italian Empire ; Hitler's 'lebensraum' ; the approach of war.

3. *Britain and the World*

- (a) Second World War : Expansion and contraction of the Axis Powers.
- (b) Continued Search for Peace : United Nations Organisation ; its political, social and economic aspirations.
- (c) A Divided World : The Cold War—a difference in ideologies ; development of communism in China and Russia ; regional pacts ; flash points ; the movement towards co-existence. The War on Want—a difference in living standards ; affluent societies ; under-developed countries ; population problems ; the new nations of Africa and Asia.
- (d) European Economic Co-operation : Post-war economic recovery ; the evolution of the Common Market and European Free Trade Association.

SECTION F. HISTORY, 1870-PRESENT DAY

The aim of this section is to introduce the pupils to the background of some of the important events of the last hundred years or so and the development of some of our modern institutions. It is hoped that by so doing they will have a better understanding of that development or decay which lies behind everything they see or hear about and some appreciation of their rights, duties and responsibilities in the society they are about to enter.

I. *Britain (1870-Present Day)*

1. *A survey of Science and Technology*

- (a) The invention of the internal combustion engine and its practical application to the development for car and aeroplane.
- (b) Telegraph, telephone, radio and television and their effect on world communications.
- (c) Telstar and the space race.
- (d) The origin and development of atomic energy. Development and research towards destructive and peaceful uses.

2. *Individual and Public Health*

- (a) The discovery and production of new drugs, e.g., The Curies and Radium, Fleming and Penicillin, Waksman and Streptomycin, Salk and Polio vaccine.
- (b) Social reform and the development of social services to the Welfare State.

3. *Education*

II. *Britain in a European and World Setting*

- (a) Background to the 1914-1918 War.
- (b) The Great War 1914-1918. The actual course of the war not to be treated in detail but the significance of some events of major importance—the entry of America on the side of the Allies and the Bolshevik Revolution in Russia—must be brought out and the causes of the ultimate defeat of Germany explained.
- (c) The Peace of Versailles—the new map of Europe.
- (d) The League of Nations.
- (e) The aftermath of the war. The Wall Street crash and World economic depression—mass unemployment and industrial strife—The General Strike.
- (f) The British Empire and Commonwealth—The Statute of Westminster (1931).
- (g) Adolf Hitler and the rise of National Socialism in Germany. Mussolini and Fascism in Italy. Hitler's territorial claims in Europe—Chamberlain and Munich.
- (h) The Second World War. As with the Great War of 1914-1918, the actual course of the war should not be treated in detail, but attention should be drawn to the significant events, e.g. :
 - Dunkirk. The Battle of Britain. Churchill's leadership and speeches. The blitz and its effect on civilian populations.
 - The Japanese attack on Pearl Harbour and America's entry into the war. Russia. The decision to use the atomic bomb on Japanese cities.
- (i) The United Nations Organisation—its aims and ideals—the part played in specific instances, e.g., Korea, Suez, Congo, Cyprus. The specialised agencies of the U.N.O. with particular reference to developing countries.

- (j) Emergence of power blocks—rival ideologies of east and west.
- (k) The change from Empire to Commonwealth.
- (l) India—Gandhi and Civil Disobedience—Independence.
- (m) The wind of change in Africa.

III. *Ourselves and the Community*

1. *Local Government*

The Parish Council (Parish Councils Act 1894) and the Parish Meeting. Rural and Urban District Councils. County, County Borough and Borough Councils. The Greater London Council.

How local government works and the services supplied by local authorities—the relationship between local and national government.

Rates and Taxes showing the relationship between local and central government.

Local elections.

2. *National Government*

The meaning of democracy. The main political parties in Britain. How a General Election is conducted. Parliament and the Cabinet. The machinery of government and the role of the Opposition. Government spending and Taxation. The position of the monarch. The machinery of government in other countries, e.g., U.S.A., U.S.S.R., India.

3. *A survey of housing in the 20th century*

Private and municipal building. Town and Country Planning. Building Societies and house purchase.

4. *Banks, Saving and Spending*

Various methods of saving, e.g., Post Office, Building Societies, Government Bonds, Unit Trusts. Interest rates. Hire Purchase—its use and abuse. Insurance.

5. *A brief introduction to the legal system of Britain with a short survey of crime and punishment in the past to contrast with present day attitudes.*

6. *Social services in Britain today—their finance and administration—the rights and obligations of the individual concerning them.*

SECTION G. ECONOMIC AND SOCIAL HISTORY : 1066-1688

Economic history is concerned with the resources of a community, and its study helps the child to understand the essential continuity of the organisation of labour, and material resources and production of his country. Social history provides the touch of humanity that brings economic history to life, and both together explain and illuminate political history.

The emphasis throughout should be on the forces leading to change and also on the effect of individuals on society and events. Although some technical terms must be known detailed knowledge of technical points will not be expected, e.g., terms of Statutes, 16th century exchange and usury, Poor Law. The topics set out in the syllabus should be treated in such a way that their inter-relationships are appreciated by the pupils.

Credit will be given where a candidate can illustrate his answers by local examples, reference to evidence seen or visited (e.g., with reference to buildings) and by reference to the part played by important characters.

1. *Social Structure 11th and 12th Century*

Classes in Norman England. Nulle terre sans seigneur. Social obligations. Domesday Book. Role of Church.

2. *Village Life in Early Middle Ages*

Structure of village—church, castle or manor house, manorial system (n.b. variations). Village at work, manorial court and officials. Subsistence farming.

3. *Town Life*

Size of towns, n.b. London and Norwich. Development of Guild System. Markets and fairs. Town buildings.

4. *Development of Trade*

Medieval trade routes. Importance of Crusades and Arab expansion. Role of such cities as Venice and the Hanse. Fairs to organise trade—Merchant Staplers and Merchant Adventurers with growth of wool trade in 15th and 16th Centuries.

5. *Break-up of the Manorial System*

Black Death, Peasants' Revolt. Commutation alienation and consolidation. Growth of sheep farming (n.b. role of monasteries). Dissolution of monasteries—effect on land market and enclosures. Depopulation. Rogues and vagabonds and attempts to deal with them.

6. *Voyages of Discovery and Growth of Trade*

16th century turn to the sea and clash with Spain—bad effects on trade. Inflation with influx of silver to Spain. Attempts to find north-east and north-west passages. Growth of Merchant Companies.

7. *Financial Changes. Development of Currency*

Role of Jewish and Italian financiers in Middle Ages. Changing attitudes to usury with Reformation. 16th century inflation and devaluation of currency.

8. *Social Structure in 16th and 17th Centuries*

Changing social classes, lessening power of nobility and rise in influence of landed gentry or squires—effect on role of Parliament. Improvement in standard of living—housing, clothes, variety of goods available.

9. *Changing Industry in 16th and 17th Centuries*

Industrial revolution in 16th century in glass, printing, machinery, iron and coal. New Draperies (n.b. effect on East Anglia). Collapse of guilds and development of domestic system. Monopolies and patents. Effects of changing Poor Law and Acts of Settlement. Reaction to foreign workers, e.g., Huguenots and Flemings.

10. *Civil War*

Social and economic background and causes of Civil War. The effect on social life, e.g., some breakdown of parochialism, changed attitude to trade and finance, increased toleration.

SECTION H. ECONOMIC AND SOCIAL HISTORY : 1640-PRESENT
DAY

Economic history is concerned with the resources of a community, and its study helps the child to understand the essential continuity of the organisation of labour, and material resources and production of his country. Social history provides the touch of humanity that brings economic history to life, and both together explain and illuminate political history.

The emphasis throughout should be on the forces leading to change and also on the effect of individuals on society and events. Although some technical terms must be known detailed knowledge of technical points will not be expected, e.g., terms of Statutes, Poor Law. The topics set out in the syllabus should be treated in such a way that their inter-relations are appreciated by the pupils.

Credit will be given where a candidate can illustrate his answers by local examples, reference to evidence seen or visited (e.g., with reference to buildings) and by reference to the part played by important characters.

1. *Agriculture*

Effects of early enclosure movements: The Agrarian revolution; new farmers and methods; 18th century enclosure movement; the Corn Laws; golden age of English agriculture; 19th century depression; modern mechanisation; state intervention and changes in the 20th century.

2. *Industry*

The division of labour and the "domestic system"; the Industrial Revolution; inventions and results; growth and organisation of the textile, coal, iron, steel, pottery, engineering industries. Atomic power.

3. *Transport and Communications*

Roads; turnpikes; roadmakers; vehicles; canals; steam; trains; cars; air transport; telegraphy; post.

4. *Trade Unions*

Opposition to early Trade Unions; Combination Laws; R. Owen; Tolpuddle; new Unionism after 1851; Trades Union Congress; 20th century developments.

5. *Trade*

The 17th century Balance of Trade; Navigation Acts; Credit Banking and the National Debt; Joint Stock Companies; expansion due to Industrial Revolution; Customs Duties; Trading Companies; modern expansion and problems.

6. *Towns*

18th century towns; results of Industrial Revolution; first efforts at town planning; Victorian building; gas and electricity; housing estates; "garden cities"; modern town planning.

7. *The Communication of Ideas*

News-sheets; newspapers; modern journalism; books; influence of radio and television.

8. *Education*

The middle and upper classes; Dame schools; monitorial system; Education since 1870; 1902 Act; 1944 Act; post-war problems; Technical and Further Education; the latest developments.

9. *Social Reform—The Welfare State*

Foundling hospitals; humanitarianism; Poor Law; Workhouses; Speenhamland; Fry, Wilberforce, Peel; Old Age Pensions; National Health Service.

10. *Religion*
Puritanism ; rise of Nonconformity ; 18th century Church and Wesley ; Victorian religion ; influence of Church today.
11. *Sports, Pastimes, Amusements*
Restoration Theatre ; 18th century field sports ; growth of 'popular' entertainments ; modern 'use of leisure'.
12. *Dress and Food*
Rich and poor ; extravagance of 18th century fashions ; developments in women's fashions ; changes in eating habits ; disappearance of servant class ; mass production of food and clothing.
13. *The Arts*
Architecture—Georgian, Victorian, modern. Great artists and craftsmen.
14. *Science and Medicine*
Harvey ; Jenner ; discoveries in diet ; surgery and anaesthetics ; F. Nightingale and nursing ; new discoveries and drugs ; modern hospitals ; The National Health Service.

SECTION I. HISTORY OF SCIENCE

The aim of the syllabus is to show how the life of man has been influenced and transformed by science.

The ancient civilisations begin with the development of techniques and crafts of early man ; progressing to recorded science and the hypotheses of the Greeks, which lasted for two thousand years.

The Renaissance deals with the new experimental science and how the new ideas provoked altercations between the Church and the scientist.

The development of modern science as related to the transitions in industry, transport, medicine, the home and astronomy.

1. *Ancient*
Early crafts. Egypt, Babylon. Greek—Mathematics. Zoology. Botany. Anatomy. Physics. Astronomy.
2. *Middle Ages*
Alchemists. Arabic numerals. Keel and rudder. Compass. Glass. Printing press and how it helped to promote scientific knowledge.
3. *Renaissance*
Observation and experiment. Telescope. Astronomy. Conflict between the Ptolemaic System accepted by the Church and the heliocentric theory. Anatomy. Physics. The Royal Society.
4. *Agriculture*
Tull, the pioneer of scientific agriculture. Bakewell, scientific husbandry. How applied biology has improved plants and animals by selection and breeding. Artificial fertilisers.
5. *Industrial Revolution*
How the numerous mechanical inventions speeded up scientific progress. The toolmaker complementary to the scientist.
6. *Electricity*
Franklin. Volta. Electro magnetism. Faraday's dynamo. Modern application. Domestic. Sound and vision communications. Electronics.
7. *Conquest of Disease*
Vaccination. Pasteur. Antiseptics. Ross. Advances in surgery. Banting. Fleming. Progress in Public Health.

8. *Man learns the Past*

Geological time. New patterns of thought. Origin of the species. Archaeology.

9. *Applied Chemistry*

Modern products of the Chemical Laboratory. Explosives. Stainless steel. Aluminium. Synthetics. Plastics.

10. *The World of the Atom*

Priestley and Cavendish. X rays. Kelvin. Rutherford. Atomic energy.

11. *Science and War*

From gunpowder to intercontinental ballistic missiles.

12. *Modern Astronomy*

Herschel. Nineteenth century. Astronomy. Mapping the heavens. Modern telescopes. Man in space.

SECTION J. HISTORY OF BUILDING

Ideally, everyone should know something of the history of building, for buildings are so much a part of our life. Wherever there are buildings the landscape is never dull, if we have the necessary knowledge to appreciate them fully. It is hoped that this section will make the candidates more aware of their surroundings, and will encourage them to appreciate buildings of all types, both historical and modern; to understand their relationship with society, and the way the past has influenced the present.

Since no building can be properly understood without some knowledge of the time in which it was built, it will be necessary to give a brief background history of each period. Without some knowledge of dates the candidates' enjoyment would be limited.

It is expected that full use will be made of local history for however useful books may be, the most satisfactory way to pursue this study is close examination of the buildings themselves.

The story of building does not end with 1964, it will go on with all future generations. The syllabus aims therefore at rousing an interest which will continue well into the future, long after the candidates have left school.

1. *The First Homes and Buildings*

Archaeological evidence; materials and tools used; growth of farms and settlements; lake villages; later improvements; Stonehenge.

2. *Great Buildings of the Ancient World*

Egypt—Pyramids, temples at Thebes. Assyria—Buildings at Nineveh. Babylon—Building under Nebuchadnezzar. Greece—Palace at Knossos (Crete), Parthenon and temples of the three orders, Theatres. Rome—Colosseum, temples, villas (central heating), roads, bridges, aqueducts.

3. *The Middle Ages*

Norman invasion; allocation of land in the feudal system; manor house; villeins' cottages, town house and growth of towns; fortifications.

4. *Castles*

Site, materials, labour, building methods. Details of exterior and interior of all types of castles, e.g., motte and bailey, stone keeps, concentric castles. Domestic life of castles.

5. *The Church*

Why churches needed; archaeological evidence of early churches; development of style: Saxon, Norman, Early English, Decorated, Perpendicular, Study of Cathedrals.

6. *Monasteries*

Materials, labour, building methods, plan. Life of the monks. Dissolution and results.

7. *The Tudor Period*

Transition period, Renaissance influence. New materials; construction; study of houses of all types—exterior and interior; gardens; growth of towns; theatres and public buildings.

8. *The 17th Century*

Recognition of craftsmen and architects; work of Jones and Wren. Changes in design and construction; study of houses of all types; gardens; public buildings; churches.

9. *The 18th Century and Regency Period*

Baroque style—Vanburgh and Hawksmoor; Queen Anne and Georgian houses; terraces; town planning; work of Adam brothers; the Woods and Dances. Landscape gardens and private parks. Return to classical styles; Nash.

10. *The 19th Century*

Industrial era; revival of past styles; new materials (Paxton); gas; importance of engineers; domestic and public buildings; slums; bridges; railways and factories.

11. *20th Century Homes*

Flats, bungalows, "Prefabs", houses of all types; new materials, tools, mechanical aids, techniques; electricity, central heating; war damage and rebuilding; slum clearance; town planning, "Garden cities" and estates; building societies.

12. *Other Modern Buildings*

Churches, cathedrals; factories, shops, offices (skyscrapers), schools, airports, bridges, roads, tunnels, the role of the modern architect.

SECTION K. HISTORY OF AGRICULTURE

East Anglia, being largely an agricultural region, offers considerable scope for local study and at the same time presents real issues to the pupils.

As the history of our country is largely that of an agrarian society, the earlier part of the syllabus is predominantly English. Later, however, the scheme broadens out to deal with world food and agriculture problems.

1. *Primitive Agriculture*

Food Gathering. Mythical, botanical and archaeological theories concerning the changeover from food gathering to cultivation. Primitive implements and tools—the ard, digging stick, etc. Early domestication of animals. Early agriculture in Britain—Celtic square field plots field system. Influence of the Belgic tribes—introduction of the heavy wheeled plough. Influence of the Roman occupation on agriculture. Export of corn to Roman provinces. Influence of the Nordic invasions and the origins of the Open Field System.

2. *The Manor and the Open Fields*

The organisation of the manor under the Normans. Land tenure. Division of land according to tenure. The isolated self-sufficing village. The Domesday Survey. Crops grown and livestock—methods of cultivation. The lord of the manor and his demense. Common ownership and co-operative husbandry—crop rotation. Tools and implements. Organisation and people—social grades among the inhabitants. The system of open field farming—arable land—meadowland—common pasture—waste—woodland. The rights, duties and responsibilities of the people. The Manor Court. Manorial Offices. Bond men and free—services in labour and kind.

3. *The Break-up of the Manor*

Commutation of labour rents for money rents. The Black Death and its effects. Labour Legislation—The Ordinance of Labourers (1349) and The Statute of Labourers (1351). The new relationship of landlord and tenant in place of the old feudal lord and dependent. The Peasants' Revolt—its causes and effects. The establishment of Freehold, Copyhold and Leasehold. Consolidation of holdings. The wool trade.

4. *Agriculture under the Tudors and Stuarts*

Dissolution of monasteries and the start of an open market in land. The Enclosure Movement in the 15th and 16th centuries. The different types of enclosure. Conversion of tillage to pasture. Enclosure and population. Legislation—Acts of Parliament to limit enclosure. Contemporary comments and attacks on enclosures—Sir Thomas More—Tusser—Latimer. The argument for enclosure on the grounds of good husbandry and the argument against because of the social consequences. Social problems associated with enclosures. The Elizabethan fraternity of vagabonds. Elizabethan Poor Law. The Wool Trade and its revival. Landed gentry, small landowners and wage earning labourers. The church as a landowner. Growth of agricultural literature—Fitzherbert—Tusser. Hiring fairs. Kett's Rising (1549). Obstacles to agricultural progress. Effects of the Civil War on agricultural progress.

5. *18th Century Improvers and New Techniques*

The contribution to agriculture made by Jethro Tull, Lord Townshed, Robert Bakewell, Coke of Holkham, Arthur Young. 18th century and 16th century enclosures compared. Parliamentary Enclosure Acts—Private Enclosures. Large farms and capitalist farmers—impetus given to agriculture.

6. *The Early 19th Century*

The General Enclosure Act of 1801—the new Board of Agriculture. The Napoleonic Wars and their effects on agriculture. The English Corn Laws. Growth of population. Highways and communications. The rural population—effect of enclosures and loss of commons. Agricultural depression and the Poor Law. War Taxation—period of acute depression 1814-1836—ruin of small landowners—misery of labourers—reduction in wages—scarcity of employment—the new Poor Law (1834) and its administration. The Tolpuddle Martyrs.

7. *Tithes*

Historical origin—types of tithes—substituted forms of payment—Tithe Commutation Act 1836—redemption of tithes.

8. *The Later 19th Century to 1918*

Revival of agriculture after the depression. The influence of the railways. Foundation of the Royal Agricultural Society. Improvements in agricultural techniques—discovery of artificial fertilisers. The beginnings of scientific farming. Mechanical improvements and inventions—ploughs, reaping and mowing machines, etc. Further depression in the latter part of the century. Joseph Arch and the Agricultural Labourers Union. Agricultural Holdings Act and Ground Game Act. Foreign competition and its effects. Revival of agriculture in early 20th century—increase in dairy farming. The 1914-1918 war and its effects on agriculture—transport and food difficulties—necessity for and impetus given to increased production. Government control. Food problems associated with growth of population—necessity for imports.

9. *1918-Present Day*

Education and Research. Technical and scientific progress—mechanisation. Agriculture the industrial 'poor relation' between the wars. The National Union of Agricultural Workers and the National Farmers' Union. The 1939-1945 war and measures taken to ensure food supplies—rationing—compare with measures taken in first world war. The improved status of agriculture after the war—Government assistance—national and international marketing. National and international problems—modern and primitive practices in operation today. The United Nations Organisation and the Food and Agriculture Organisation. World food and population problems and attempts to overcome them, e.g., The Aswam High Dam, major irrigation schemes in India and Pakistan, bringing new land under cultivation in Russia and China. Agriculture as a major British industry—dependent industries.

SECTION L. HISTORY OF INDUSTRY AND COMMERCE

This section covers a specialised branch of economic history. Detailed social history is omitted and trade is included with industry. It gives a picture of the industrial growth of this country. Note :

- (a) topics will start from A.D. 1500 unless otherwise stated,
- (b) some knowledge of technical processes and products will be expected,
- (c) some knowledge of the geographical location of industries will be assumed.

1. *Coal Mining*

2. *Iron and Steel*

Before and after the Industrial Revolution.

3. *Power Sources*

Steam engines, turbines, internal combustion engine, gas turbine, electric motor.

4. *Textiles*

Medieval wool trade and industry ; the domestic system, changes in 18th and 19th centuries. Decline in 20th century cotton.

5. *Machine Tools and Mass Production*
6. *Rise of Trading Organisations*
Fairs, trade routes, craftsman trader, retailer, multiple shops, co-operative trading.
7. *Other Industries*
Pottery and glass from the 16th century, chemicals from the 18th century, electrical industry.
8. *Transport*
(a) Improvements in roads, canals, railways, cars and aircraft. Effects on trade. Manufacture of transport in 20th century.
(b) Shipbuilding in 19th century, shipping companies.
9. *Communications*
Printing and paper, effects on commerce of telephone cable, radio, etc.
10. *Commerce and Empire*
16th century and clash with Spain. 17th century with Holland, 18th and 19th centuries with France and Germany. 19th century charter companies. The rise of London as a commercial centre.
11. *International Trade*
Changing patterns of imports and exports. Navigation Acts, Mercantilism 17th century to Free Trade, 19th century Tariff Reform. Post 1945 General Agreement on Tariffs and Trade.
12. *Banking*
Banking since the middle ages—Goldsmiths, Bank of England and National Debt, Bank Charter Act 1844, 20th century.
13. *Manufacturing Organisation*
Private Companies. Joint Stock Company, Rise of the Stock Exchange, Limited Liability. Monopolies.
14. *Insurance*
The Lombards, Lloyds, Fire, Friendly Societies, Social Insurance.

SECTION M. HISTORY OF COMMUNICATION

The aim of the syllabus is to enlarge the natural interest of pupils, particularly boys, in this aspect of the progress and recorded experience of humanity. It is intended to emphasise our obviously dwindling world and our mutual dependence on each other for a more complete understanding and economic and social interdependence.

1. *Written Communications*
 - (a) *Development of Writing*
Picture writing. Hieroglyphics. Cuneiform. The alphabet. Writing tools—stylus to fountain pen to ball point pen.
 - (b) *Development of Counting*
Notch sticks, Knotted cords—examples wider than Europe. Roman and Arabic numerals. Tally sticks. Abacus. Modern devices—shop tills, comptometers, etc.
 - (c) *Developments in Middle Ages*
Monastery schools—illustrated bibles and manuscripts.

(d) *Development of Printing*

Invention of 15th century—Gutenberg and Caxton. Effects on spread of knowledge. Libraries down to 20th century: private, public, Carnegie, British Museum, special libraries.

(e) *Growth of Newspapers*

Pre 18th century—pamphlets and news sheets. Early newspapers 18th and 19th centuries—Newspaper Tax. Popular Press 1850 to today—refer to popular education in same period.

(f) *Business and Other Communication*

Typewriter. Teleprinting. Braille for the Blind.

2. *Oral Communication*

(a) *Languages of the World*

Spread of particular languages, e.g., Latin and Greek in Roman Empire. Main language today. Ideas on translation, e.g., Esperanto, United Nations Organisation.

(b) *Methods pre 19th century*

Church pulpit. Town criers. News by story telling—Minstrels, Sagas, etc.

(c) *Modern Methods*

Introduction—early methods, e.g., drums, fires, signalling by flags, etc. Recent Inventions: telephone—Alex. Bell; telegraph and cable—Samuel Morse; gramophone—T. Edison; wireless—Marconi; films and television—Friedrich Green, Edison, Baird; Telstar.

3. *Land Transport*

(a) *Early Movement*

Manpower—movement of materials, e.g., Pyramids, Stonehenge. Man's use of animals—examples throughout world down to 20th century. Invention and use of wheel.

(b) *Roads*

Trails. Roman roads. Vehicles used from early times to 18th century. 18th century roads—Telford, Macadam, etc. The period of the stagecoach.

(c) *Bridges*

Examples and materials from Rome to 20th century. Important bridges in 20th century.

(d) *Canals*

Examples in Europe, England and America 17th to 20th centuries. Network in England and Engineers (e.g., Brindley).

(e) *Railways*

Mainly in England but show English influence overseas in U.S.A., S. America, India and Europe. Early Development and Railway Engineers. Development in England from Parliamentary Acts to Nationalisation. Sources of Power—Steam, Diesel, Electricity. Underground Railways from 1863. Modern problems. Safety Methods.

(f) *The Motor Age*

Road development—19th century to today. The Horseless Carriage and its development. Heavy transport. Mass production methods—Ford, Nuffield. Effects on modern life and modern problems.

- (g) *Other Land Transport*
 Development of bicycle. Public transport—trams, trolleys, omnibuses. Modern developments, e.g., monorails.

4. *Sea Transport*

- (a) *Earliest Methods*
 Logs—rafts—coracles—dugouts.
- (b) *Ancient Civilisations*
 Egypt—Nile and Red Sea. Rome and Greece—Galleys and Merchant Ships.
- (c) *The Vikings*
 The Long Ships and routes.
- (d) *Ship Design—Medieval to 19th century*
 Round ships. Forecastles and Armament. Changes from 16th century. The fighting ship—Ark Royal—The Vasa—Victory, etc. The Merchant Ship—East Indiamen.
- (e) *Changes in 19th century*
 Changes from sail to steam: wood to iron and steel; sidepaddle and screw. Shipping Routes: changes in 16th century; Suez and Panama Canals. Sources of Power: steam power—coaling bases; oil—sources of supply. Naval Development: changes in design, size, manpower, firepower, defence, e.g., The Dreadnought, Aircraft Carriers, Submarines. Merchant Development: passenger ships after 1850; clipper ships; tramp steamers; tankers; special ships, e.g., Refrigeration ships, etc.
- (f) *Recent Developments*
 Pleasure craft. Hovercraft and Hydroplanes.
- (g) *Conditions at Sea*
 Conditions of seamen past and present. Improvements in Navigation—Steering, Compass, Modern Devices, e.g., Radar. International Regulations—Plimsoll Line. Safety—Lighthouses, Royal National Lifeboat Institution, Capt. Manby, etc.

5. *Air Transport*

- (a) *Early Ideas*
 Icarus, Leonardo da Vinci, etc.
- (b) *Lighter than air Attempts*
 Balloons—Montgolfiers, etc. Dirigibles—Zeppelins, R101, etc.
- (c) *Heavier than air Machines*
 The Wright Brothers, Bleriot, etc. Development to 1945: opening air routes—Alcock and Brown, etc.; Passenger Lines; Effects of two world wars. Development after 1945: modern routes; freight traffic, e.g., Berlin Air Lift 1948; modern machines—propeller driven, supersonic travel. Recent developments: helicopters; rockets; satellites.
- (d) *Safety in the Air*
 Parachutes. Air Control. Modern Inventions—Radar—Automatic Pilots, etc.
- (e) *General Importance*
 Flying Doctor Service. Use in difficult territory, e.g., Canada, Brazil, etc.

6. *Postal Services*

(a) *Early Methods*

Imperial Post. Pre 1840 in England. Pigeon Post. Pony Express.

(b) *The Penny Post*—Rowland Hill.

(c) *Modern Developments*

International Postal Union. G.P.O. and its services.

SECTION N. THE DEVELOPMENT OF ENGLISH POLITICAL SYSTEM FROM SAXON TIMES TO THE PRESENT DAY

This section is designed to provide an understanding of the political system of England, showing how it has grown out of the past. It should help to satisfy those who claim that one of the main aims of History teaching is to make our pupils more responsible citizens, through an understanding of the time in which they live.

1. *Anglo-Saxon Government*

Folk moot, hundred moot, shire moot. Tithings, Early Saxon kingdoms, witan, shires, parish.

2. *Local Government to 1800*

Development of parish and officers: churchwarden, etc. Vestry and vestry meeting. Manor and manor courts. County organisation: sheriff and coroner. Magistrates. Borough and City.

3. *Local Government 19th and 20th Centuries*

Need for reform: Industrial revolution. Boards of Guardians. Reform of town councils; county councils; urban and rural district councils; parish council.

4. *Central Government*

The Feudal System; Kings Household and Council; His Officials—Chancellor, etc. Exchequer system—Westminster. Great Councils.

5. *Struggle between King and Nobles*

Magna Carta. De Montfort. Crusades. "Strong" kings and "Weak" kings. Wars of the Roses. Tudor Monarchs.

6. *Struggle between King and Parliament*

Elizabeth—James I—Charles I—Cromwell—The Commonwealth—Restoration—Bill of Rights—1688 Revolution.

7. *Cabinet Government*

Privy Council—Georges—"Prime" Minister—Whigs and Walpole—Pitt—Victoria—Position of Cabinet and Government today.

8. *Representation of the People*

Decline of Shire Moot—De Montfort—Desire for Reform "Rotten" boroughs—1832 Reform Act to 1928. Adult Suffrage. Decline of House of Lords—Life Peerages.

9. *Parliament Today*

Palace of Westminster—Elections—Lords and Commons—Speaker, etc. Passing an Act of Parliament.

10. *Development of Political Parties*

Roundheads and Cavaliers—Whigs and Tories—Conservative, Liberal and Labour Parties.

11. *National Taxation and How it is Spent*

Direct and Indirect Taxation—Ministries.

12. *Local Taxation and How it is Spent*

Rates and Local Government Services.

SECTION O. A HISTORY OF THE BRITISH COMMONWEALTH OF NATIONS

The British Commonwealth of Nations covers roughly one-third of the world land surface and includes about one-quarter of the world population. From a consideration of size alone an understanding of its nature, problems and achievements is essential in acquiring an understanding of the Modern World.

Britain has much to offer the under developed countries in both social and economic advance. Her service in these spheres to the backward commonwealth countries illustrates the principle that the "Haves" of society should assist the "Have nots". Her assistance enables these countries to develop and play a more important role in world affairs.

Many world problems, e.g., extreme poverty, racial intolerance and mass illiteracy are also commonwealth problems. A study of difficult conditions within our own sphere of influence will help to gain an understanding of such problems within their world context.

In the 20th century the concept of the commonwealth has undergone a radical change. Today the commonwealth is a good example of co-operation between countries—particularly in trade and economic help.

1. *The First Empire. 16th-18th Centuries*

During these centuries overseas settlements were widely assumed to be primarily for the benefit of the mother-country. Colonial trade and manufactures were regulated to help the homeland: dependencies were only valued for the wealth they could bring to England.

(a) Early Settlements in North America. 16th and 17th Centuries.

(b) Situation in North America by Early 18th Century—Traders—The Thirteen Colonies.

(c) Trading Companies of Elizabeth I's Reign—British African Company—East India Company.

(d) Rivalry of England and France in India. 18th Century.

(e) Rivalry of England and France in North America. 18th Century.

(f) Loss of the American Colonies.

Destruction of the theory of submission of colonies to the mother-country.

2. *The Second Empire. (A) Late 18th Century-Mid 19th Century*

At first an attitude of despair prevailed. Colonies deserted the mother-country as soon as they became useful. Interest began to revive in the 1830s (Edward Gibbon Wakefield and the National Colonization Society).

- (a) Discovery of Australia and New Zealand and their History to the 1850s.
- (b) Canada to 1867—Economic Development—Relations with the U.S.A.—Government.
- (c) India to 1857—Rule of the Governor-Generals.

3. *The Second Empire (B) Mid 19th Century-Present Day*

Britain became Empire conscious. Many British people had emigrated to the temperate lands colonies. After 1870 colonies acquired prestige value and those in the tropical lands were expanded. Gradually the concept of the British Commonwealth of Nations emerged.

- (a) The Scramble for Africa. Egypt and the Sudan—the Suez Canal. West Africa—Nigeria and the Gold Coast—Sir George Goldie and Lord Lugard. East Africa. Central Africa—Nyasaland and the Rhodesias—Cecil Rhodes.
- (b) South Africa 1815-1914—Conflict between the Boers and British Settlers.
- (c) (i) Economic Development of Canada from 1870. (ii) Political and Economic Development of Australia and New Zealand from the 1850s.
- (d) Types of Commonwealth Government—Development of Dominion Status—Growth of Commonwealth Unity.
- (e) India from the 1860s—Rule of the Viceroys—Desire for Self-Rule—Independence.
- (f) Africa in the 20th Century. Desire for Independence—Ghana. Nigeria. Colour-Bar—South Africa and Apartheid. Problem of Poverty—Uganda.
- (g) West Indies. 19th Century—Present Day—Effects of the Abolition of Slavery—Improved Economic situation of 20th Century—Independence.

SECTION P. WORLD PROBLEMS

This section lists a number of issues which have disturbed the 20th century. Most of these, though in somewhat different forms, have also been major problems at various stages in history. This syllabus, therefore, attempts not only to state the modern problem, but to indicate its growth and its effects on earlier societies.

The emphasis should be laid on the modern period, and comparisons made with the past as indicated in each section. Study of recent flash-points will, of course, be an integral part of the work.

The problems should not be viewed in too abstract or academic a fashion, but should be treated as concretely as possible. It is intended that personal involvement should be implicit throughout.

1. *Shrinking World (Comparison of communications today and 200 years ago)*

- (a) Development of transport—land, water, air, space.
- (b) Inter-personal communications—postal, telegraph, telephone.
- (c) Mass media—press, radio, television.

2. *War*

- (a) Its causes. A basic pattern in a changing setting.
- (b) Pre-20th century—Social implications, weapons, geographical limitations.
- (c) 20th century—widening social implications, mass produced weapons, geographical extent.

3. *Clash of Nationalisms*

- (a) 16th-18th centuries ; Spain, France, England.
- (b) 19th century ; Italy, Germany, Balkans.
- (c) 20th century ; U.S.S.R., America, the African States.

4. *Clash of Races*

- (a) 16th-18th centuries ; Vasco da Gama and the Indians. The Conquistadores and the Aztecs. The Slave Trade.
- (b) 19th century ; Australasia, the White Man's burden. The American Red Indian.
- (c) 20th century ; Nazi-racialism ; Arabs and Jews ; Turks and Greeks ; Black and White ; the Yellow Peril.

5. *Colonialism and the Emerging Nations*

- (a) Imperialism—its motives.
- (b) The decline of Imperialism—its problems. (i) Aims and demands of emerging nations. (ii) Obligations of colonial powers.
- (c) Cold War imperialism.

6. *Clash of Political Ideologies*

- (a) Rome ; the concept of empire versus barbarianism and alien religions.
- (b) Christian Europe and the Ottoman Empire.
- (c) Capitalism and Communism.
- (d) The cultivation of political prejudice—propaganda, patriotism, environment pressures.

7. *Clash of Religions*

- (a) European conflicts ; the Reformation, the ecumenical movement.
- (b) India and Pakistan ; Hindu and Moslem.
- (c) The cultivation of religious prejudice—environmental pressure ; its association with other forces (nationalism, church and state).

8. *Imbalance of World Wealth*

- (a) The affluent societies.
- (b) The under-developed countries.
- (c) Population problems.

9. *The State and Individual Responsibility in an Industrial Society*

- (a) Introduction ; mechanical progress and social problems of 19th century Britain.
- (b) Automation and full employment.
- (c) The problems arising from the increase of leisure.
- (d) The individual and advertising pressures (The need for consumer protection).
- (e) State welfare and personal responsibility.

HISTORY (South)

- (a) *Written paper 2 hours duration plus 10 minutes reading time 80%.*
(b) *Topic or project 20%.*

The syllabus aims at encouraging the teaching of modern history. It is deliberately selective, omitting much political and constitutional history as beyond the comprehension of most 16 year olds. The main emphasis is on British History but a general knowledge of important world events and developments will be required. The underlying principle which has guided the Board is that the aim of history teaching, in the later years of secondary education, is to provide the child with an understanding of its environment and international relations.

The examination paper will be divided into three sections :

SECTION A. 1760-1870

SECTION B. 1870-1960

SECTION C. 1760-1960 (Essays)

although some questions may overlap. Candidates will be required to answer *four* questions carrying 15% of the marks each from either or both of Sections A and B and *one* question from Section C carrying 20% of the marks. There will be 15 questions in each of Sections A and B and 10 questions in Section C. Candidates who have studied approximately any 100 years within the above limits should find an adequate choice of questions. All questions will be worded to give some degree of direction. Credit will be given to evidence of understanding rather than mere rote learning.

A "topic" or "project" book shall contain not more than 3,000 words and may be based on any period of history. Illustrations and diagrams may be included. Models are acceptable if accompanied by an oral or written explanation placing the model in its historical setting. A list of source references should be given and all quotations should be in inverted commas. The choice of topic should be approved by the History teacher. The topic should be prepared during not more than the last two years preceding the examination. The booklet may be typed, if so desired.

SECTION A. 1760-1870

1. *The State of the Country*

Size and distribution of population, housing, government, conditions and types of work, and leisure occupations of those dwelling in town and country in the middle years of the 18th century.

2. *Agriculture, Industry and Transport*

The form of agriculture in 1760 dealing with population distribution, the enclosure movement, agricultural improvement during the 18th century, depression following the French Wars, agricultural improvements and prosperity to 1870, the Domestic System, development of steam power and its effect on textile industries, iron and steel, coal mining and the potteries, the need for improved transport: work of Turnpike Trusts; road engineers; canals and their economic effect; the Golden Age of coaching; railway development and steam ships.

3. *Development of Major British Possessions Overseas*

The story of Canada from the Conquest of Quebec to show the progress to political responsibility; the assumption by the British Government of responsibility for India; the exploration and settlement

of Australia and New Zealand ; the purchase of South Africa followed by the eventual foundation of the Boer Republic ; the exploration of Central Africa.

It is suggested that one of these countries be studied up to 1931. Minor dependencies need not be studied in detail.

4. *French Revolution and Napoleon*

Social, economic and political background of the Revolution ; the Revolutionary and Napoleonic Wars : Napoleon's domestic policy.

5. *Reform*

Social conditions resulting from the agricultural and industrial changes of the period ; growth of demand for reform after 1815 ; the repressive policy of the government ; movements for Reform to include : Parliamentary, Local Government, Poor Law, Health, Factory and Penal Code ; Working-class movements.

6. *U.S.A.*

Peculiarities and differences in the basic economy of the thirteen colonies ; the struggle for independence and the establishment of the constitution ; expansion of the Union to South and West ; attitudes adopted by the Union to European powers ; the question of slavery leading to Civil War ; reconstruction ; economic development and population increase.

7. *Rise of Nation States*

National feeling in the world in the 19th century ; at least one movement from : Latin America, Belgium, Germany, Greece, Italy, Ireland, Poland.

SECTION B. 1870-1960

1. *Agriculture, Industry, Transport and Communications. 1870-1914*

End of the Golden Age of British farming ; the years of depression ; attempts at re-adjustment—dairy and pasture farming, market gardening. Development in the steel industry ; shipping—from sail to steam ; the motor car and bicycle ; development in the use of electricity ; telephone and wireless ; flying machines. The challenge to Britain's industrial supremacy.

2. *Political and Social Changes and Reforms. 1870-1914*

Parliamentary democracy ; local government ; the Trade Union Movement and the origin of the Labour Party. Irish Home Rule. Changing attitudes to the problems of unemployment and poverty—the social legislation of the early 20th century ; education ; emancipation of women (to the end of the period) ; medical and public health ; the development of popular newspapers ; organised sports.

3. *Development of the Empire. 1870-1914*

It is suggested that the developments which are most likely to be understood by C.S.E. pupils are concerned with Africa. The main events which shaped the 19th century development of other regions belong to the period before 1870 and it is assumed that any sequel to these events (up to 1914) will already have been considered.

The scramble for Africa ; Egypt and the Sudan ; Rhodesia ; events leading to the Boer War ; the course of the War ; the Union of South Africa.

4. *The First World War*

Pupils will be expected to have only a general knowledge of the origins and nature of the First World War, a more detailed knowledge of the Peace Settlement; the treatment of Germany; the new nations; the League of Nations.

5. *Between the Wars*

(a) Britain : post-war problems of Britain's industries; the rise of the Labour Party; trade union activity—the General Strike; the economic depression of the 1930's; air travel; motor transport; the B.B.C.; organised sport.

(b) The World : Russia—the Communist Revolution, the five-year plans; the Fascist dictatorships—the rise to power of Mussolini and Hitler; the U.S.A.—isolationism, depression, and the New Deal.

(c) The Failure of the League of Nations; China and Japan; Abyssinia; the Spanish Civil War; Austria; Munich; and the outbreak of the Second World War.

6. *The Second World War*

The phoney war; Dunkirk and the fall of France; Battle of Britain and the Blitz; the Battle of the Atlantic; the German Attack on Russia; American entry into the War; The Pacific Campaign; Alamein; Stalingrad; D-Day and the liberation of Europe; Concentration Camps and Refugees; Hiroshima and Nagasaki—V.J. Day.

7. *The Post-War World*

(a) World Problems. 1. U.N.O. 2. The Cold War and nuclear threat; a study of one of the following regions: Germany; Eastern Europe; The Far East.

(b) The Emergent Nations. A study of one of the following areas—China, Middle East, The Commonwealth.

(c) Post War Britain. The Labour Government and problems of Reconstruction; The Welfare State; Nationalisation; Relaxation of War-time controls; new developments in Industry and Social Conditions.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 8

Mathematics Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

MATHEMATICS (North)

(a) Paper I $2\frac{1}{2}$ hours duration 50%. (b) Paper II $2\frac{1}{2}$ hours duration 50%.

In the examination questions will be designed to test the understanding of mathematical principles and all methods showing mathematical appreciation of the problems will be accepted. Formal proofs will not be required. The use of four-figure tables and/or slide rules will be permitted where these give the required degree of accuracy. A list of formulae which may be required will be given on the examination paper. Every candidate must be provided with a ruler graduated in inches and tenths of an inch and in centimetres and millimetres, a set square, a protractor, compasses and a hard pencil.

Form of Examination

The examination will consist of two papers :

PAPER I will consist of many short questions based on the "common-core" syllabus.

PAPER II will be divided into two parts :

Part 1 will be compulsory and will consist of further questions of the problem type based on the "common-core" syllabus and carry 15% of the total marks.

Part 2 will consist of questions from either one or two optional special studies and will be worth 35% of the total marks.

Candidates are to satisfy the examiner on both papers.

Length of Examination

Two and a half hours will be allowed on each paper, but it is expected that most candidates will complete each paper within two hours.

Candidates choosing surveying as their optional special study will be allowed forty-five minutes for Part 1 of Paper II.

Course Work

A school may, if it so desires, have candidates' course work in optional special studies assessed and taken into account provided that the work of all candidates following the same course in that school is submitted.

Three-tenths of the marks allocated for the special studies will be awarded for course work where this is submitted.

PAPER II PART 2. OPTIONAL SPECIAL STUDIES

- Section A. Mathematics in Agriculture.
- Section B. Applied Mathematics.
- Section C. Commercial Arithmetic.
- Section D. General Mathematics.
- Section E. Geometrical Drawing.
- Section F. The History of Mathematics.
- Section G. Modern Mathematics.
- Section H. Air Navigation.
- Section I. Statistics.
- Section J. Surveying.

Suggestions of further topics for optional special studies will be considered.

PAPER I AND PAPER II PART 1

THE COMMON-CORE SYLLABUS

1. *Number and Calculations*

Development of number and place value. Number bases other than 10. Simple number patterns and series. Prime numbers and factors. Four rules in simple and compound numbers. Parts of a whole—fractions, decimals and decimalisation, percentages (*Simple fractions in common use*). Simple interest, compound interest, appreciation and depreciation over short periods (*Other than simple interest, period not to exceed 3 years*). Profit and loss. Discount. Directed numbers. Averages. Speed, distance, time (including travel graphs). Ratio and proportion. Index notation, including standard form for very large and very small numbers. Places of decimals. Significant figures. Estimates and approximations. Logarithms (positive characteristics only in this part of the syllabus). Graphs as an aid to calculation.

Application of all the above to :

Measurements of length, weight, capacity, area and volume in both British and metric systems. Decimal money systems. Time on both the 12 and 24-hour clocks. (*Examination questions will be limited to units in common use. Normally there will be no more than 3 units of measurement in a single question. Of the metric system, the following should be known : Km, m, cm, mm. ; Metric tonne, Kg, gm, mg. ; litre, c.c. ml.*)

2. *Personal and Home Budgeting*

Salaries, wages, commission, piece-work and deductions. Rent, rates, house purchase and mortgage repayments. Hire purchase. Insurance and assurance. Home budgeting.

3. *Formulae*

Generalised arithmetic leading to formulae—their construction, application, evaluation and simple transposition. (Involving a knowledge of algebraic notation, the use of brackets, directed numbers, fractions (*Fractions with single term denominators only*), index notation, common factors, including those obtained by grouping, and simple factors of trinomials (*Either the co-efficient of x^2 or the constant term to be a prime number*)).

4. *Equations*

Simple equations. Linear equations with two unknowns. Quadratic equations (solution by factors only).

5. *Graphical Work*

Pie diagrams. Bar charts. Histograms. Travel graphs. Conversion graphs. Rectangular cartesian co-ordinates. Graphs of the functions :

$$y = mx + c$$

$$y = ax^2 + bx + c \text{ (including } y = ax^2)$$

$$y = \frac{k}{x}$$

Gradient and intercepts of a straight line graph. Determination of a linear law. Interpolation and extrapolation. Graphical solution of equations. (*Candidates will be expected to interpret provided graphs as well as to plot and interpret their own graphs.*)

6. *Common Shapes*

The properties of triangles. The equilateral triangle and the isosceles triangle. Pythagoras' theorem. The properties of quadrilaterals, including the special properties of squares, rectangles, parallelograms, kites, rhombi, trapezia and of the cyclic quadrilateral. Regular polygons (including pentagons, hexagons, and octagons). The sum of the angles of any convex polygon. Tessellations. (*Candidates will be expected to find the areas and perimeters of rectangles, triangles, parallelograms, trapezia, circles and of simple composite figures.*)

THE CIRCLE

The angle at the centre and at the circumference. Angles in the same segment. The angle in a semi-circle. Equal chords equidistant from the centre. The perpendicular bisector of a chord passes through the centre of a circle. The internal intersection of chords. Tangents from an external point. The angle between the tangent and radius. Area of sector and segment. Length of arc.

CONSTRUCTIONS

Angles of 90° and 60° and bisection of angles. Division of lines. Perpendicular and parallel lines. Construction of the common shapes. The incircle and the circumcircle of the triangle.

7. *Common Solids*

The nets of cubes, cuboids, prisms, cylinders, right pyramids, right cones, tetrahedrons, octahedrons, duodecahedrons and icosahedrons. The surface areas and volumes of cubes, cuboids, prisms, cylinders, right pyramids, right cones, and spheres. (*Formulae of surface area and volume of pyramids, cones and spheres will be given in examinations.*)

8. *Locus*

Understanding common loci in two dimensions (including the ellipse).

9. *Symmetry*

Symmetry about a line and about a point.

10. *Similarity and Congruence*

Similarity and congruence of common shapes. Areas of similar shapes. Volumes of similar solids.

11. *Direction*

Compass bearings given as whole circle bearings only. Angles of elevation and depression. Solution of simple problems by drawing to scale.

12. *Trigonometry*

Tangent, sine and cosine of acute angles. Solution of right-angled triangles and easy problems, including three-dimensional problems. (*A, B, C; a, b, c; notation for angles and sides of a triangle.*)

PAPER II PART 2

SECTION A. MATHEMATICS IN AGRICULTURE

1. *Crop Husbandry, Calculations and Costings*

Land measurement, acreages, etc., crop yields, seed requirements, crop storage, chemical and other farm requisites. Fertilisers and lime. Crop sales and profits.

2. *Animal Husbandry Calculations*

Rationing, food conversions, growth, live weight gain, killing out percentages, livestock yields, housing space requirements, livestock sales.

3. *Farm Machinery Calculations*

Rate of field work, drill and sprayer calibration, measurement of power, gear and pulley speeds, levers, moments, centre of gravity, specific gravity, electrical calculations, storage space requirements, depreciations.

4. *Finance*

Subsidies, wages (casual and regular), tax. insurances.

SECTION B. APPLIED MATHEMATICS

1. *Forces on a Particle*

Diagrammatic representation, resultant, simple vector diagrams, vector sum and difference, parallelogram of forces, triangle of forces, Hooke's Law : graphical illustration : simple examples of tensile stress.

2. *Co-Planar Forces on a Rigid Body*

Centre of gravity, equilibrium, moments of forces about a point, clockwise and anti-clockwise moments, moments of forces which are not parallel.

3. *Machines*

Levers, wheel and axle, mechanical advantage and velocity ratio, pulleys, belt drives, gears, principle of work, power, horse power friction. Efficiency.

4. *Graphs*

Drawing and interpretation of graphs involving time, distance, velocity, acceleration (to include gradient at a point).

5. *Force and Acceleration*

Newton's laws of motion. (Examples may be set involving simple trigonometry. Logarithms or slide rule may be used where appropriate. English and metric units may be used.)

SECTION C. COMMERCIAL ARITHMETIC

1. *Commercial forms*

Invoices, statements of account, bank statement.

2. *Graphs applied to commercial topics*

Interpretation and analysis (in preference to simple construction), including change of scales, suppressed zero, etc. Drawing conclusions from graphs, the validity of interpolation and extrapolation.

3. *National and Local Government Income and Expenditure*

Income Tax : principles, calculations of allowances and taxable income, P.A.Y.E. codes, use of P.A.Y.E. tables (week 1 and others).

4. *Insurance*

Premium calculations, principle and application of average profits in life assurance.

5. *House Purchase*

Building society and insurance methods, loans by local authorities, costs.

6. *Investments*

Interest on savings (including compound interest by tables), capital bonus on redemption, dividends and growth in investments (especially unit trusts). Stocks and shares. Appreciation and depreciation over longer periods.

SECTION D. GENERAL MATHEMATICS

1. Indices : positive, negative and fractional.
2. Logarithms : positive and negative characteristics. The use of the A, B, C and D scales of a 10 in. slide rule is permissible.
3. Solution of quadratic equations by : formulae*, or completing the square, or graphically.
4. Graphical representation of equations ; candidates may be asked to identify a given graph with its equation in a multiple choice or pairing type question.
5. The gradient of a curve.
6. Variation : direct and inverse but not partial.
7. Problems on triangles requiring the use of the sine or cosine rule* but excluding the ambiguous case.
8. Graphs of : sine, cosine, and tangent of angles up to 360° .

*Formulae will be given.

SECTION E. GEOMETRICAL DRAWING

1. Construction of triangles given appropriate data, including ratio of sides to perimeter.
2. Construction of squares equal in area to given rectangles and of triangles equal to area to given quadrilaterals.
3. Construction of polygons.
4. Problems based on the circumcircle and incircle of the triangle.
5. Tangents from a point to a circle. Direct and transverse tangents of dissimilar circles.
6. Circles touching each other externally and internally.
7. Circles within converging lines.
8. The locus of a moving point ; the envelope of a moving line.
9. Curves—circle, ellipse, parabola, hyperbola, cycloid and helix.
10. Three dimensional problems requiring rabatment technique, e.g., finding the diagonal of a rectangular solid.

SECTION F. HISTORY OF MATHEMATICS

The Ahmes Papyrus. Thales, Pythagoras, Euclid, Archimedes. Zero, the decimal place notation and the Hindu-Arabic numerals. A brief history of elementary algebra. A short account of the elementary development of trigonometry. A short history of ordinary English weights and measures. The introduction of the metric system. The influence of astronomy and navigation on the growth of mathematics. The development of the calendar. Calculating devices, and discovery of logarithms. Galileo, Newton.

SECTION G. MODERN MATHEMATICS

1. Number systems to any base.
2. The associative, distributive and commutative laws.
3. Algebra of sets, to include knowledge of the following :
 - (a) finite and infinite sets,
 - (b) equality of sets,
 - (c) the null set,
 - (d) subsets,
 - (e) universal set,
 - (f) Venn-Euler diagrams,
 - (g) union of sets,
 - (h) intersection of sets,

- (i) difference of sets,
 - (j) complement of sets,
 - (k) sets of numbers—integers, rational, natural, irrational,
 - (l) laws of the algebra of sets.
4. Algebra of propositions :
 - (a) conjunction,
 - (b) disjunction,
 - (c) negative,
 - (d) conditional,
 - (e) truth tables involving up to two propositions.
 - (f) laws of the algebra of proposition.
 5. Comparison between laws of algebra of sets and those of proposition.
 6. Simple Boolean algebra :
 - (a) Connection with 3 and 4 above ;
 - (b) Simple switch circuits.
 7. Simple linear programming by graphs only.
 8. Matrices—up to 2×2 .
 - (a) addition,
 - (b) multiplication,
 - (c) identity.
 9. Vectors as applied to the geometry in the common-core syllabus.

NOMENCLATURE

X in an element of Y	$X \in Y$
A is a subset of B	$A \subset B$
A is a subset of B	$B \supset A$
Union of A and B	$A \cup B$
Intersection of A and B	$A \cap B$

Set notation :

$$A = \{ 1, 2, 3 \}$$

or $A = \{ X \mid X \text{ is the first three natural numbers} \}$

Universal set is U or 1

Null set is ϕ or 0

Complement of A is A'

Sets of Numbers :

Real R + Integers Z Rational Q Natural N Irrational Q'

Conjunction $p \wedge q$

Disjunction $p \vee q$

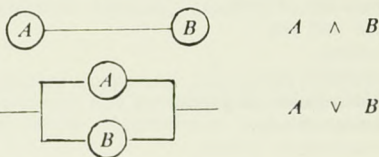
Negation $\sim p$

Conditional \longrightarrow

s is equivalent to t $s \iff t$

s implies t $s \implies t$

Circuits :



SECTION H. AIR NAVIGATION

1. The earth in relation to :
 - (a) the sun : axis, daily rotation and annual motion ; longitude and time, meridians, the prime meridian ;
 - (b) the stars : the pole star, altitude/latitude, parallels of latitude ; Fixing position : the astrolabe and theodolite. Altitude zenith distance, azimuth. Finding latitude and longitude.
2. Measurement of distance
Great circle measurement along meridian of longitude. The nautical mile. Map distortions, scale.
3. Measurement of direction
True and magnetic north. The magnetic compass and compass rose. Variation. Mercator's chart.
4. Measurement of speed
The airspeed indicator, time of flight in still air.
5. The triangle of velocities, course, airspeed, track, groundspeed, wind velocity, conventional symbols. Solution of vector triangle. Drift finding, wind speed and direction, finding track and ground-speed, or course and air-speed, calculating flight time and estimated time of arrival.
6. Aids to determining position : bearings, pinpoints, fixes (visual, radio, radar).
7. The air plot. The student should be capable of making a simple air plot, and given a fix, should be able to find wind velocity and calculate new course and estimated time of arrival.

SECTION I. STATISTICS

1. *Collection and Tabulation* of data, especially that relevant to the pupil, class, school, locality—presentation of data in columnar form, including grouped frequency distribution.
2. *Pictorial Representation* of data—the histogram and frequency polygon, bar chart, pie chart, picturegram and ideograph—time series and simple cases of moving average, with an appreciation of causes of fluctuations—general trend. Good and bad representations—suppressed zero, absence or ambiguity of scales ; how choice of scale affects overall impression.
3. *Measurement of Central Tendency*—Mode—actual from a set of figures, and estimated geometrically from a histogram. The ogive or cumulative frequency graph—use to estimate median ; extension of idea to quartiles and percentiles. Arithmetic Mean, including calculation using "assumed mean".
4. *Weighted Averages*—Application to Cost of Living and other indices.
5. *Dispersion*. Study of shapes obtained in histograms and frequency polygons—normal shapes, and an appreciation of situations that tend to produce the shape ; positive and negative skew ; 'U', 'J', and rectangular distributions. (No formula for curve). The need for a measure of spread as well as the mean when comparing distributions. An appreciation of the meaning of range, interpercentile and interquartile ranges, mean deviation leading to an understanding of their limitations in use. The standard deviation of a set of numbers, and of a grouped distribution—simple ideas of significant difference between an individual and the mean. (Use of approximations : 2 out of 3 are within ± 1 s.d. of the mean ; 19 out of 20 are within ± 2 s.d. of the mean ; 499 out of 500 are within ± 3 s.d. of the mean, assuming a normal distribution or one nearly so.)

6. *Sampling.* Advantages and disadvantages of a sample—bias and attempts to obtain a random sample—Gallup and similar polls—simple ideas of sampling in industry (no calculations)—size of sample and reliability of result. All collected data subject to errors, therefore calculations based on it must be estimates.
7. *Correlation.* Scatter diagrams—examination to determine to what extent two variables are correlated (if at all)—Examples of correlated variables in everyday life.
8. *Probability.* Tossing coins, throwing dice, etc.—simple ideas of mutually exclusive and independent events. Probability ranges from 0 to 1—sum of separate probabilities = 1. Simple ideas of arrangements and selections.

SECTION J. SURVEYING

1. The use and setting up, where applicable, of the following instruments : 100 ft. and 66 ft. measuring tapes ; the surveyor's chain ; ranging rods ; cross staff ; arrows ; clinometer, theodolite ; plane table and alidade ; prismatic compass.
2. How to record details of field work in a surveyor's note book.
3. How to set up an accurate base line using ranging rods and chain or tape.
4. Height finding where base is (a) accessible, (b) inaccessible, by scale drawing or by calculation ; chaining ; magnetic traverse ; triangulation by plane table ; closed traverse by theodolite ; filling in of detail by offsetting.
5. The mathematical principles behind these methods, the precautions to be taken to ensure a high standard of accuracy, methods of checking for errors during a survey, and correction of readings before plotting.
6. The application of Pythagoras' theorem to the setting out of right angles on a large scale, and the pegging out of a given plan accurately, e.g., a games pitch, or building foundations.

Method of Examination

Candidates must submit for inspection (a) surveyor's notebook, (b) folio of drawings based on this notebook kept for not less than 12 months.

N.B. Some of this work may have been carried out in collaboration with *not more than TWO* other candidates, it being recognised that certain tasks are not easily carried out alone.

Candidates will also take a practical examination to be arranged by the Board. This practical examination would replace the whole of Part 2 of Paper II of the examination.

MATHEMATICS (South)

- (a) Paper I 2 hours duration 45%. (b) Paper II 2 hours duration 35%.
 (c) School assessment 20%.

1. This syllabus represents a minimum and not a maximum of mathematical ideas and applications expected to be included in a five-year course in secondary schools. Its aim is not to produce uniformity of content and approach in schools' syllabuses. Teachers are free to extend it in width and depth according to the needs and capabilities of their pupils.

2. It is especially important that those aspects of mathematics which may not be examined should not be omitted for that reason. For example, the place of History in Mathematics (and of Mathematics in History) may be introduced at many places in the course.

Opportunities of linking mathematics with other subjects in the curriculum are numerous, and should be taken whenever possible.

3. Facts and processes are of some importance but the main aim will be to examine, as far as possible, mathematical understanding. Every effort will be made to ensure that no candidate can be prepared for the examination except by means of a sound mathematical education. Throughout the course children should be encouraged to be critical of their own conclusions and solutions to problems.

4. The use of aids to calculation, e.g., ready reckoners, logarithms, slide rule, desk calculators, should be encouraged, but desk calculators will not be allowed in examinations for the time being.

In all computation, the aim should be a degree of accuracy commensurate with practical considerations.

5. Any valid method of solving problems will be accepted.

The Scheme of the Examination

Recognising that the syllabus should be acceptable to as many groups and schools as possible, that it should allow for variety in both subject matter and method of teaching, and that it should be suitable for the large range of ability, the Board has divided the syllabus into two main parts:

- I. General mathematics which cover the basic knowledge required in any mathematics syllabus.
- II. A number of sections for further study which will allow for the variations in content mentioned above.

PAPER I

Mainly of the multi-facet type to test in breadth Part I of the syllabus.

PAPER II

Mainly of the more traditional type to test Part II of the syllabus. The paper will be arranged in sections and candidates will be required to attempt any five of the questions from any sections they wish, choosing not more than three from any one section.

The sections will be as follows:

- A. Further General Mathematics.
- B. Mechanics.
- C. Surveying.
- D. Commercial Arithmetic.
- E. Statistics.
- F. Modern Mathematics.

A school assessment will be required for each candidate and this will be used with the examination marks to arrive at the final grading.

SYLLABUS

PART I

1. Numerals. Place values. The use of zero. These to be related to numbers in any scale but with particular reference to denary and binary scales. Conversion between denary and binary numbers.
2. The metric system as a practical example of a system of tens. The British systems of money, weights and measures. These can provide examples of other scales of notation.
3. Number bonds in the addition and multiplication tables. Addition and subtraction in the binary system. Primes, factors, squares and square roots by factors, cubes and cube roots by factors.
4. The extension of the number system to include fractions (vulgar and decimal), negative and irrational numbers. Simple treatment of bicimals.
5. Simple number patterns and series. The n th term in symbolic form. Summation in easy cases.
6. The comparison of numbers. Ratio and percentage. Proportion. The relationship between measurements—rate. Foreign currency and exchange. Use of timetables. Construction and use of ready reckoners. Use of interest tables.
7. Index notation. Standard form. The laws of indices. Fractional and negative indices in easy cases. Elementary theory of logarithms, use of tables. Square, square root and reciprocal tables.
8. Easy computation involving any of the foregoing, applied as far as possible to practical situations. It is expected that these situations will include the study of such topics as budgeting, profit and loss, hire purchase, rates, taxes, insurance, interest (simple and compound), mortgages and savings.
9. The associative, distributive and commutative laws to be dealt with intuitively at first and specifically when the need is felt. Considerable attention should be given to estimation, approximations and degrees of accuracy in all calculations.
10. The expression of number in symbolic terms, numbers in general, special numbers and constants, such as g , π .
11. The construction, manipulation, interpretation and evaluation of formulae.
12. Elementary algebraic operations : the four rules, including application to directed numbers, substitution, use of brackets. Standard forms $(a + b)^2$, $(a - b)^2$, $(a + b)$, $(a - b)$.
13. Solution of linear equations with not more than two unknowns and quadratic equations including non-integral roots. The graphical expressions of algebraic formulae and relationships. Solution of inequations of first degree.
14. Simple variation with one constant.
15. The collection of data. Surveys and samples.
16. The construction, use and interpretation of pictograms, histograms, and pie charts.
17. A critical appreciation of the accuracy of statistics and of their representation.
18. The curve of normal distribution.
19. Co-ordinate representation. The discovery and illustration of relationships by graphs. Conversion graphs and travel graphs. The straight line, parabola and hyperbola. Gradients, turning points and area under a straight line. Inequalities.
20. The recognition of shapes in two and three dimensions. Shapes from movement of points and lines : three dimensional shapes from movement of two dimensional shapes.

21. Two dimensional shapes: triangles, quadrilaterals and polygons. Regular polygons with special reference to the hexagon; the circle as a polygon (limiting case). Angular and linear properties of regular shapes; axes of symmetry; similarity and proportionality; congruence and uniqueness. Area/perimeter relationship for common shapes.
22. Three dimensional shapes: the five Platonic solids. Right prisms including the cylinder, right pyramids including the cone. The sphere. Nets of these (except sphere). Volume/surface area relationship for common solids.
23. Areas and volumes of shapes likely to be encountered in practical situations, e.g., triangles, quadrilaterals, circles; prisms and pyramids having regular cross sections.
24. Geometrical constructions as applications of basic principles. Bisection of lines and angles. Construction of angles, 60° , 90° , etc. Triangles, parallelograms, rectangles, hexagons, octagons. Set squares may be used as well as rulers and compasses. Use of similar triangles in copying angles, division of line into equal parts.
25. Application of similarity in scale drawing and in the trigonometrical ratios. The trigonometrical ratios of 0° , 30° , 45° , 60° , 90° in surd form. The special property of the sides of the right angled triangle. Solution of right angled and isosceles triangles and application to height and range finding.
26. Direction and change of direction. Points of the compass and bearings (by three figure system only). Fixed position by two bearings.
27. Position on the earth's surface; lines of latitude and longitude; distance and time on the earth's surface related to angular measurement; nautical miles and knots.

PART II

Section A. Further General Mathematics

More difficult questions may be set on the Part I syllabus together with the following items:

- (a) Areas of irregular and compounded shapes and volumes of compounded solids.
- (b) Algebraic expressions and equations involving fractions.
- (c) Graphical treatment of sine, cosine and tangent values from 0° - 360° .
- (d) Solution of any triangle.
- (e) Applications of trigonometry to three dimensional problems.
- (f) Circular measure. Length of arc. Area of sector.

Section B. Mechanics

It is desirable that there should be practical work by students and demonstrations by the teacher whilst constant recourse should be made to graphical treatment.

- (a) Weight, force, mass, gravity and acceleration.
- (b) Distance and its measurement. The use of the micrometer and vernier.
- (c) Time and its measurement. The simple pendulum.
- (d) Velocity and its measurement.
- (e) Addition and resolution of velocities and forces (graphically).
- (f) Newton's laws of motion.
- (g) Density. Specific gravity. Archimedes' law.
- (h) Pressure in liquids and gases.
- (i) Work, power and energy.
- (j) Simple machines.
- (k) Moments and levers.
- (l) Centre of gravity of simple plane and solid objects.
- (m) Extension of elastic bodies (Hooke's law).

Section C. Surveying

It is not intended that expensive equipment be used: it is the understanding of the mathematical principles underlying the work which is important. Instruments made by pupils should be used where possible.

Clear and accurate drawings will be expected.

(a) *Estimation and measurement*

Use of chain and tape for measurement of length; estimation of distances and heights: approximation by pacing. Use of clinometer, simple theodolite for measurement of angles, horizontal and vertical: estimation of angles: bearings; knowledge of main points of compass in own locality: use of compass; use of sun and stars for finding direction.

(b) *Height finding*

Height estimation by comparison and use of units (e.g., bricks). Use of similar triangles; shadow and sighting methods; measurement of angles and use of trigonometrical ratios.

(c) *Surveys and plans*

(i) Triangulation: the rigidity of the triangle: choosing points and setting out triangles on the ground and on paper.

(ii) (a) Use of plane table: working from a fixed point and fixing boundary points by sighting and distance measurement; working from two fixed points in cases of inaccessible boundaries.

(b) Use of prismatic compass for types of survey detailed in (a).

(iii) Drawing of irregular boundaries by offsets from a base line; use of cross-staff; keeping a field book and translating results to plan on paper. Surveys using angle measurement.

(d) *Levelling*

Use of simple level to compare heights; finding difference in heights of two points by series of comparisons. Setting out a contour line on the ground; drawing a contour line on a plan; making a section from a contour map.

(e) *Finding areas*

Measurement and estimation of area; setting out an acre and parts of an acre on the ground (various shapes); finding areas in square yards and acres from plans.

Section D. Commercial Arithmetic

(a) The development and merits of the various systems of money, weights and measures; the advantages and use of decimalised systems.

(b) Cost calculations. Invoices.

(c) Profit and loss on returns

(d) Cash and trade discounts.

(e) Simple and compound interest.

(f) Bankers discount and bills of exchange.

(g) Commission. Wages.

(h) Bankruptcy. Insurance.

(i) Rates of exchange. Conversion of British weights and measures to metric system and vice-versa.

(j) Rates, taxes, hire purchase, mortgages.

(k) Rates of increase and depreciation.

(l) Graphical representation of all kinds should be encouraged throughout.

Section E. Statistics

- (a) *Collection, tabulation and representation of data*
Class data (bar charts, pie charts, etc.), Time data, Frequency distributions. Discussion on misleading data. Study of newspapers, etc.
- (b) *Frequency distributions*
(i) Normal shape of distribution: cumulative frequency, percentiles.
(ii) Single measure to represent distribution. Mode, Median. Mean, Σ notation.
(iii) Measures of spread. Range and deviation.
(iv) Elementary idea of significance. Danger of generalisation from sample.
- (c) *Weighted averages and index numbers, etc.*
"Cost of Living" index. Considerations of base, weighting of index, etc. Limitation of index numbers. Birth rates, death rates and economic measures.
- (d) *Simple association of two variables—correlation*
Mainly graphical approach. Scatter diagrams.
- (e) *Simple probability*
Coins, dice, cards, etc. Experimental methods.
- (f) *Sampling*
Large and small samples—link with normal distribution. Types of sampling—random, quota, etc.

Examples throughout should, as far as possible, be collected by the pupils, e.g., from classroom, biological data, etc.

The course should include at least one actual survey, the pupils handling the scope, design, interviewing and analysis.

Section F. Modern Mathematics

- (a) The idea and notation of a set. Union \cup , intersection \cap , element \in , complement of A is A' , subset \subset , empty set ϕ , and universal sets U . Venn diagrams. Simple problems. The use of sets in geometry. Point sets, constructions. Loci as the intersections of two sets.
- (b) Cartesian co-ordinates as ordered pairs. Graphs. Inequality and the solution of inequalities. The use of graphs in linear programming.
- (c) The idea of a vector. Addition of vectors.
- (d) Matrices: (2×2) . The matrix array as an entity. Multiplication of matrices. Associative, distributive and commutative laws. Determinant value of matrices. The inverse matrix. Unit and null matrices. Their use in the solution of simultaneous equations. The matrix form for a vector. Addition of matrices.
- (e) Motion geometry. Transformations—reflexion, rotation, translation.

N.B. It is realised that this is a far from comprehensive syllabus on Modern Mathematics, but consideration has been given to the fact that, as yet, many scholars are not ready to undertake a fuller programme. An attempt has been made to encourage schools to include some of this material in their teaching and the content of this part of the syllabus will be kept under constant review.

It is emphasised, however, that Modern Mathematics should not be regarded as something apart from the rest of mathematics and that answers based on modern concepts will be acceptable in any other part of the examination.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 9

Modern Languages
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

MODERN LANGUAGES

The Board is offering mode 1 examinations in three languages : French, German, Spanish.

NORTH

The general examination arrangements and mark allocation will be the same in all three languages.

Oral : Dictation $\frac{1}{2}$ hour allowed 10% ; Conversation 20% ; Reading 10% ; Total 40%.

Written paper : Aural comprehension $\frac{1}{4}$ hour allowed 15% ; Visual comprehension $\frac{1}{2}$ hour allowed 15% ; Free composition $\frac{3}{4}$ hour allowed 15% ; Total 45%.

Course work : 15%.

SYLLABUS

FRENCH (North)

To produce a complete and definite syllabus for an examination in a modern language is well-nigh impossible. What can be done is to attempt to define the aims of a course, to suggest certain lines of approach and to outline the basic grammar which it is recommended should be covered. In many schools it may be desirable to vary or extend the suggested syllabus. The Board's aims in this syllabus are as follows :

1. To enable a pupil who has followed a normal secondary school course to understand simple spoken French and to write it from dictation.
2. To enable such a pupil to communicate orally and in writing with reasonable accuracy and fluency on subjects within his or her experience.
3. To enable a pupil to read straightforward French prose of a suitable standard.
4. To enable a pupil to acquire some knowledge of France and the French and to encourage an interest in one or more aspects of French civilisation.

Primarily a non-academic approach should be used, with the emphasis on realistic situations and current idiom. Vocabulary should be directly related to the work undertaken and not made the subject of isolated study. Active participation of the pupil in simulated situations and conversations which he or she can readily understand is to be encouraged. The use of audio-visual aids may well prove helpful in the hands of many teachers, but a passive approach by the pupil is to be avoided.

TOPICS SUGGESTED FOR STUDY

(A detailed outline of one of the suggested topics is appended.)

Time. Colours. Age.

Weather, Seasons. Festivals. Days. Months. Dates.

Numerals (1-1000)—written forms only from 1-31, with "cent" and "mille".

Mètre. Kilomètre. Litre. Gramme. Kilogramme. Livre.

Money. Shops and Markets.

Transport. Travel. Meals.

Town. Countryside. Seaside.

Animals.

House and Garden. Family. Rooms. Furniture. Hotels. Restaurants.
School. Lessons. Games. Professions and occupations.
Parts of body. Clothes.
Neighbouring countries and peoples.

BASIC GRAMMAR—which should arise naturally from the lesson and not precede it or be made the subject of isolated study.

1. *Verbs*

(a) Knowledge and use of verbs in the forms and persons in current use.

The following to be included :

Common regular verbs, including reflexives, and these irregulars :
aller, courir, venir, ouvrir (and couvrir, offrir), dormir (and partir, sortir, servir, sentir), avoir, pouvoir, vouloir, devoir, recevoir, voir, savoir, être, faire, dire, prendre (and apprendre, comprendre), connaître, mettre, croire, écrire, lire, suivre, conduire.

(b) The following tenses to be used :

Present. Imperfect. Perfect. Future with "aller".

(c) The pupil should be able to use the Imperative and common impersonal expressions, inversion for questions and after quoted words.

(d) The pupil should be able to recognise : Future. Conditional, Pluperfect and Past Historic.

2. *Adverbs*

(a) Knowledge and use of ne . . . pas, ne . . . jamais, ne . . . rien, ne . . . personne, ne . . . plus, ne . . . que.

(b) The use of common adverbs and adverbial expressions.

(c) Comparison of adverbs.

3. *Adjectives*

(a) The use of common adjectives.

(b) Position and agreement of adjectives.

(c) Comparison of adjectives.

4. *Nouns*

(a) Gender and plural of nouns.

(b) Nouns of two genders—l'élève, le concierge, l'enfant.

5. *Pronouns*

(a) Personal. (b) Relative. (c) Emphatic. (d) "on".

6. *Articles*

(a) Definite and indefinite.

(b) Partitive.

(c) Use of "de" after negative, before adjective and after quantities.

7. *Prepositions*

(a) Use of prepositions, including use with the infinitive.

(b) Use of "après avoir" and "après être".

8. *Conjunctions*

(a) Use of common conjunctions, NOT including those followed by the subjunctive.

DETAILED OUTLINE OF "SHOPS AND MARKETS"

To give some idea of the amount of vocabulary, the number of expressions and the type of contributions expected from a very good candidate, an example (chosen at random from the list) is treated in detail.

1. *Types of shops and other main nouns needed: shopkeepers and chief goods sold:*

- (a) *Boucherie*
boucher; viande; boeuf; gigot; mouton; porc; veau; biftek.
- (b) *Boulangerie*
boulangier; pain (blanc, bis, petit pain); baguette; croissant.
- (c) *Épicerie*
épiciier; thé; café; sucre; farine; vin; oeuf; fromage; beurre; sel; confitures; savon; lait; chocolat; bonbons; biscuits.
- (d) *Pharmacie*
pharmacien; aspirine; médicaments; savon; parfum.
- (e) *Bureau de Tabac*
cigarettes; tabac; pipe; allumettes; carte postale; timbre.
- (f) *Charcuterie*
charcutier; jambon; saucisse.
- (g) *Pâtisserie*
pâtissier; gâteau; tarte (lette); glace; chocolat; bonbons.
- (h) *Laiterie*
laitier; crémier; lait; crème; oeuf; fromage.
- (i) *Chez le Fruitier* (Fruiterie)
primeur; légume; fruit; pomme; pomme de terre; petits pois; salade; chou; chou-fleur; tomate; oignons; haricots (verts); orange; poire; banane; fraise; cerise; raisin; prune; pêche.
- (f) *Librairie*
libraire; papier à lettres; enveloppe; journal; revue; magazine; illustré (included because of the deceptive meaning of some of the vocabulary).

(k) *Additional Words*

For conversation, for recognition in a French town; useful also in a reading or comprehension passage:

marché; supermarché; coiffeur (coiffeuse); poisson; fleur; grand magasin; boutique; modes; patron; propriétaire; client; garçon; demoiselle de magasin; vendeuse; comptoir; caisse; vitrine; panier; sac; boîte; paquet; bouteille; pièce; botte; prix; note.

2. *Conversation: for class work, oral examination, comprehension test, taking the form of a conversation, composition (dialogue):*

ça fait combien?; merci; s'il vous plaît; je voudrais . . . je prendrai . . . donnez-moi . . . un comme ça; un kilo de . . . 250 grammes de . . . c'est un peu (plutôt) cher . . . c'est ouvert?; je m'excuse mais je n'ai pas de monnaie; Est-ce que vous avez des . . . ?

3. *Structures*(a) *Question Forms*

Où? . . . chez le . . . un magasin où . . . Qui?; le . . . est un homme qui . . . ; Qu'est-ce qu'on?; Qu'est-ce qu'il fait?; Combien de . . . y a-t-il? (e.g., in a picture).

(b) *Other Structures: à la, au, chez le; pour + infinitive; donnez-moi.*

4. *Background. An important part of the syllabus, which should be associated with course topic work.*

Alimentation générale—familistère; bureau de tabac; (stamps); charcuterie; pharmacie—Sécurité Sociale; boulangerie—croissants, baguettes etc.—going to a shop for bread; pâtisserie—tea room (salon de thé) etc.; hours during which shops are open—Sunday opening—*Mondays*; librairie; bibliothèque—difference between French and English public libraries.

Notes on examination

ORAL

(a) *Dictation*

- (i) to consist of a complete passage, of interest to the age of the candidate;
- (ii) to contain only simple tenses of the type given on the specimen paper;
- (iii) to be dictated, in short phrases marked on the paper, by the usual French teacher of the class, and to follow the usual procedure for readings and pauses, etc. The latter to be indicated clearly on the script.

(b) *Reading*

- (i) Unprepared passage. Six texts to be available, so that they may be varied and of interest to either sex. The usual five minutes to be allotted for study by the candidate, before the passage is read aloud to the examiner. (7½%).
- (ii) Prepared passage. Two copies to be available, one for the examiner and one for the candidate. Passage to contain not more than 100 words. (2½%).

(c) *Conversation*

A number of carefully graded questions on everyday topics, suitable to the age and interests of the candidate, who should be encouraged to talk freely. The more able candidates to be given scope, and the nervous one encouragement by simple questions. A list of suitable topics is appended, but the list is not to be regarded as exclusive.

The normal course work done by the candidate during the last 12-18 months of the school course to be available for inspection and possible discussion, should a candidate be particularly nervous or inarticulate at the examination.

Much will be left to the discretion of the examiner

WRITTEN PAPER

(a) *Aural Comprehension*

An interesting and suitable complete passage to be chosen and read three times to the candidates. After the first reading candidates to be allowed to make notes in French.

A second reading, followed by a further period for note taking.

At the third reading pauses are to be made after short sections indicated on the script, when questions in French would be asked and candidate required to give written answer in French, before the examiner proceeded to the next section. This procedure to be followed until passage is completed. 8 to 10 questions to be posed. The examiner should use his discretion over the amount of time allowed for the answer to each section. No notes may be taken during reading of the script.

(b) Visual Comprehension

A complete passage in clear type to be provided. The candidate is required to answer the questions based on the passage. An equal number of questions (six each approximately) to be posed in French and in English, the candidate being required to answer in the same language. This is to ensure that the less fluent candidate may prove his ability to comprehend the written French, even if his ability to reply in the language is limited.

(c) Free Composition. A choice of question to be given.

- (i) **Picture type.** A series of pictures to be presented for the candidate to write in French his own story, based on the pictures. A résumé to be given. Simple situations depicted which would evoke a story in the simple tenses, but credit to be given to the able candidate who uses more difficult tenses.
- (ii) **Letter type.** An answer to a given situation or given requirements of a letter to a given correspondent. Care to be taken in the setting of this type of question so that a "prepared" answer is prevented.
- (iii) **Narrative type.** A story of about 100-120 words in French about a given series of events. A résumé to be provided for guidance.

COURSE WORK

A notebook or folder of general French studies compiled during the last 12-18 months of school course. This should be written mainly in English, but French may be included.

SYLLABUS

GERMAN (North)

The aims and method are fundamentally the same as for French (see page 3).

It is felt that the basic rules cannot be neglected or ignored, although it is appreciated that familiarity with all the complexities of a foreign language is beyond most pupils. The aim is the highest possible standard which is consistent with the aims already stated. A knowledge of any other foreign language is not presupposed but the Board accepts that German may well be normally a three-year course in the secondary school curriculum.

TOPICS

- Number (written to 101).
- Date. Time. Age.
- Weather. Seasons. Festivals.
- Money. Shopping.
- Germany (geographical).
- Cafe. Meals. Hotels.
- Towns. Streets. High Streets. Public Buildings.
- Country. Seaside.
- Transport. Travel.
- Markets and measures.
- Houses. Gardens. Furniture.
- School. Lessons. Games.
- Parts of body. Clothes.
- Animals and Zoos.
- Youth Hostels and Foreign Lands.

BASIC GRAMMAR

It would be unwise to be dogmatic about the inclusion or exclusion of any point of grammar or vocabulary. This is intended as a guide to the teacher, whose common sense must prove more valuable than any printed list.

1. *Verbs*
Strong and weak verbs in common use. Modal verbs—können, müssen, wollen, dürfen (darf ich) sollen. Tenses—Present, Imperfect, Perfect, Pluperfect (Recognition only of Future, Conditional). Subjunctive—recognition, but not usage (except möchte). Avoid passive by man . . . or reflexive verb. Avoid Ihr form. Use Ich, Du, Er, Wir, Sie as paradigm.
2. *Nouns*
Plurals of nouns should be learned when learning the singular form and Gender.
3. *Pronouns* All forms are expected.
4. *Prepositions*
With Accusative, Acc and Dative, Dative während and statt with genitive.
5. *Declensions*
Candidates are expected to learn the DER and EIN types. The singular without the defining word is not expected (e.g., guter Wein).
6. *Cases*
The four cases are required—Nominative, accusative, genitive and dative.
7. *Word Order*
(a) Main clauses. (b) Subordinate clauses. (c) Order of pronouns and adverbs.
8. *Particles* such as ja, wohl, are not expected.
9. *Impersonal Expressions*—if common, are required.
10. *Infinitive*, used with and without ZU or as second infinitive is required.

Notes on examination

ORAL. This will follow the pattern of that in French (see page 6).

WRITTEN PAPER

- (a) Aural comprehension test, as in French.
- (b) A Visual comprehension. ALL the questions will require answers in German.
- (c) Either (i) A Free Composition. (Guided as in French).
OR (ii) A Passage for translation into English.

The alternative passage for translation is included as an experiment in a paper that will probably be taken by fewer and abler candidates than French. It will then be the link with the more formal Advanced level course work.

COURSE WORK

The course work will have been prepared during the year in German or in English, on a topic chosen by the candidate. This will be available for the oral test.

SPANISH (North)

The aims and methods are substantially the same as those for French (see page 3). The Grammar is restricted to the essentials, although it is realised that many schools may advance further, and introduce usages not included in the list.

Latin-American variations in pronunciation will be accepted.

TOPICS SUGGESTED FOR STUDY

Number (written to 101; both spellings accepted, e.g., veinte y uno or veintiuno).

Time. Age. Dates.

Weather. Seasons. Festivals.

Metric Weights and Measures. Money.

Shops and Markets.

Town. Countryside. Seaside.

Transport. Travel.

Café. Restaurant. Hotel. Meals.

Animals.

House. Garden. Family. Rooms. Furniture.

School. Lessons. Games.

Parts of the Body. Clothes.

Spain, geographical, historical.

Bull-fighting.

Flamenco.

Latin-America and its peoples and customs

BASIC GRAMMAR

1. *Verbs*

Knowledge and use of regular verbs in the forms and persons in common use in the following tenses:

Present; Imperfect; Past Definite; Perfect; Imperative (polite).

Recognition of Future and other common tenses: Common Reflexive uses.

Knowledge of the more common root-changing verbs.

The following irregular verbs in the same tenses:

ser, estar, tener, haber.

dar, andar.

hacer, poder, poner, querer, saber, traer, caer, ver, conocer.

ir, salir, venir, oír, decir, reír, conducir.

Common impersonal expressions.

2. *Nouns*

Plurals; Feminines of common masculine nouns.

3. *Pronouns*

Personal—forms, positions. Relative, interrogative.

4. *Adjectives*

Articles: Uses of; Agreement; Apocopation of uno, bueno, grande; Comparison. Omissions of articles.

5. *Adverbs*: Formation. Uses. Comparison.

6. *Prepositions*: including common uses with infinitive.

7. *Conjunctions*: excluding all uses with subjunctive.

Examination notes

The examination arrangements will be similar to those in French (see page 6).

The Free Composition section will always give choice, and one of the subjects will be based on a strip cartoon of about six pictures.

The course work will have been prepared during the year, in English, or in English and Spanish, on a Spanish or Latin-American theme chosen by the candidate. The subject-matter of the course work may be made use of in the Conversation section.

SOUTH

The general examination arrangements and mark allocations will be the same in all three languages.

Oral 35%. Paper I 1½ hours duration 35%. Paper II 1½ hours duration 30%.

FRENCH (South)

In the following aims, 'language' shall be deemed to mean "everyday language applicable to situations within the child's experience". While the aims stated remain constant, methods of implementation are left to individual teachers.

A pupil may reasonably be expected :

1. to understand the language when it is spoken ;
2. to express himself orally in the language ;
3. to understand the language when he reads* it ;
4. to express himself in writing in the language ;
5. to have acquired some knowledge of the general background of the people who speak the language as their mother tongue.

*"reads" should not be taken to mean "reads aloud".

GRAMMATICAL CONTENT AND VOCABULARY

The grammar and vocabulary for C.S.E. French shall be based on *Le Français Fondamental*, (1^{er} Degré) 2^e édition 1959 ; with the following alterations and additions :

- (a) Agreements of past participles with "être" shall be taught (*elle est allée*) ; agreement of past participles of reflexive verbs shall receive extra credit.
- (b) Pupils shall be expected to *recognise* the 3rd Singular and Plural forms of the Past Historic.
- (c) Pupils shall be expected to *recognise* the Future Perfect and Conditional Perfect tenses.
- (d) The Subjunctive Mood shall not be taught.
- (e) Pupils shall be expected to *recognise* the Relative Pronoun "dont".
- (f) "quelque part" shall be taught.
- (g) *au Canada, au Japon, aux Etats-Unis* shall be taught.
- (h) "cependant" shall be taught.

In specifying in such detail the grammatical content of its syllabus, the Board is seeking only to provide, for the teacher, guidance as to which grammatical points he can safely leave out in the confident knowledge that they will not occur in the Board's paper. "*Le Français fondamental*" is to be regarded as the *core* of examination material, but additional credit will be given for more advanced knowledge.

EXAMINATION DETAILS

PAPER I

Question 1. Passage for comprehension with questions set and answered in the foreign language 10%

The questions set on the passage will be graded in difficulty, beginning with simple ones leading to the more difficult type, e.g., those beginning with "pourquoi". This should prove particularly useful in assessing the range of candidates likely to be taking this examination.

Question 2. A composition in the foreign language 25%

Each year the paper will offer a choice of three composition subjects. One of these will always be a letter—*either* a letter to be written by the candidate, based on a given outline, *or* a reply by the candidate to a letter in the foreign language which will be given in full on the question paper. A story to be based on a given series of pictures will also be set each year, and the third subject will be any one of the following :

- (a) A story guided by a supplied summary in the language.
- (b) The continuation of a given story.
- (c) An unassisted composition (choice of three titles).

The length of the composition is to be set at not less than 100 words and not more than 120 words.

PAPER II

Question 1. Dictation (Time $\frac{1}{2}$ hour) 10%

This is to be given by the candidate's own teacher, and not by means of a standard dictation recorded on tape. Further details of actual procedure will be published later.

<i>Question 2.</i> Passage for comprehension with questions set and answered in English 10%	} Time 1 hour
<i>Question 3.</i> Questions on background studies. (20 questions to be set of which 10 are to be answered. Questions to be set and answered in English.) 10%	

The Board considers that Background Studies should be an integral part of the language course and should arise organically from the study of the language itself. It is hoped that this method of testing, offering as it does a generous choice of question and covering a wide general field in subject matter will allow the allocated proportion of the marks to reflect the knowledge gained by the pupil from incidental information given by his language teacher, while not making it incumbent upon the teacher to give detailed instruction in geography, history, art, music, etc., in addition to his language work.

It is also felt that this method of testing is fairer to the child than the folio originally proposed, in view of the considerable amount of project work already proposed for other subjects and because the allocation of marks to this section of the examination is thought disproportionate to the quantity of the work involved in the preparation of a folio.

EXPLANATORY NOTES

1. *The Oral Examination*

This to be given by the pupil's own teacher, who should assess his pupils by means of an actual oral examination and in the light of his personal knowledge of the children. The examination should include a reading passage, seen for several minutes previously by the candidate. In addition the following are thought suitable for inclusion in the oral examination :

- (a) general conversation on topics within the child's experience ;
- (b) conversation concerning the country whose language the child is studying ;
- (c) description of a picture ;
- (d) short talk prepared by the candidate ;
- (e) questions asked by the candidate.

In order to secure Grade 4 in the subject as a whole, the pupil must gain at least 15 of the 35 marks allotted to the oral examination.

The oral examination will be moderated externally. Considerable time has been devoted to discussion of the best methods of carrying out the moderating, but it is felt that there is not yet a sufficient body of knowledge on this subject for it to make a final decision at present. Memoranda on the subject of (a) moderating and (b) the oral examination, will be published at a later date ; the latter giving further details as to the timing of the oral, the sub-dividing of marks and the choice of reading passages, etc.

List of Memoranda to be published later

1. Supplements outlining the suggested grammatical content and vocabulary for languages other than French.
2. The Oral Examination.
3. Moderating the Examination in Modern Languages.

GERMAN (South)

It is not proposed, for the present, to offer details as to the grammatical content or vocabulary of the syllabus, but it is hoped that teachers will follow the same lines of approach as those suggested for French (see page 10).

The Board's recommendations for the grammatical content and vocabulary which will serve as a basis in other languages, will be published later in the form of supplements.

SPANISH (South)

It is not proposed, for the present, to offer details as to the grammatical content or vocabulary of the syllabus, but it is hoped that teachers will follow the same lines of approach as those suggested for French (see page 10).

The Board's recommendations for the grammatical content and vocabulary which will serve as a basis in other languages, will be published later in the form of supplements.

East Anglian
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Secondary Education

SECTION 10

Music Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

MUSIC (North)

The examination will comprise four main sections :

A. Musical Literacy

This section will contain two tests designed to assess

- (i) candidate's ability to read music instrumentally or vocally,
- (ii) candidate's ability to listen to a piece of music and record certain details of what he has heard.

B. Musical Knowledge

This section will contain two tests :

- (i) General Musical Knowledge ;
- (ii) Set Works.

C. Individual Interest

An individual study in depth over a minimum period of 12 months.

D. Evidence of Ensemble or Solo Work

WEIGHTING

Section A. Test I. 10% of marks. Test II, 20% of marks.

Section B. Test I. 20% of marks. Test II 20% of marks.

Section C. 30% of marks.

Section D. Not marked but carries limitation on final grading if not complied with.

SECTION A. MUSICAL LITERACY

There will be no specific questions on rudiments. The scope of the tests in this section will assume knowledge up to the limits shown below :

Time signatures ; knowledge of the general principles but questions restricted to the use of 2/4, 3/4, 4/4 and 6/8. Clefs ; both treble and bass clefs. Common musical signs and Italian terms with their abbreviations. Notes and rests ; only the common rhythmic patterns will be used. Key signatures ; major and minor key signatures up to and including FOUR sharps and FOUR flats.

Test I. Playing or Singing at Sight

A simple unaccompanied passage of about eight bars in 2/4, 3/4 or 4/4 time in an easy major key. This passage may be performed in any of the following ways :

- (a) Sung—either solfa names or any vowel sound may be used.
- (b) Whistled.
- (c) Played on any melodic instrument of candidate's choice.

(Tests will be available for any voices or instruments but entry forms must state which voice or instrument will be used by each candidate.)

The tests will be conducted by an external examiner. Candidates will be given up to ONE minute to peruse the test after which they will have TWO attempts at performance—the better attempt to count. (The tonic chord and key note will be given for vocal tests.) Credit will be given for 'musical performance'.

As an alternative the candidate will have the option of writing a four-bar melody from dictation. The key will be named, the tonic chord and keynote sounded and the pulse indicated. The whole melody will be played once, the first phrase will be played twice, the second phrase will be played twice and then the whole melody will be played twice. The test will begin on the FIRST beat of the bar.

Test II. Listening and Writing

The candidate will listen to a piece of music of not more than forty bars from a specially prepared recording. During several hearings the candidate will record, on MS. provided, details of what he has heard ; e.g., time signature, tempo, dynamics, instrumentation, notes, etc. A pause will be made between each hearing.

SECTION B. MUSICAL KNOWLEDGE

Test I. General Musical Knowledge

- (a) A test of about 20 minutes duration during which 15 questions will be asked. The test will be on a specially prepared recording. The answers will require the minimum of writing and will test a wide knowledge of periods, styles and recognition of tone colour—vocal and instrumental.
- (b) 20 themes will be provided for the Music Teacher to play on the piano to the candidates. Each candidate will be supplied with a copy of the themes, five of which he will be expected to recognise by ear and/or eye.

Test II. Set Works

Two set works will be prepared, one from each of two groups headed (a) orchestral and instrumental, and (b) choral and vocal. (A full list of the set works will be available later.) Candidates will be required to answer questions on the background of the music, e.g., composer, place in history, instrumentation, conditions of performance, form—detailed analysis will not be required.

SECTION C. INDIVIDUAL INTEREST

Candidates will produce a file on a musical topic of individual interest carried out over a minimum period of twelve months. The widest possible scope will be allowed (e.g., The History of Jazz ; The Cremona Violin Makers ; The Church Organ) but the depth of study will be a major factor in assessing this work.

Alternatively candidates may offer original compositions or arrangements or the playing of a simple musical instrument made by the candidate.

As a further alternative the candidate may offer practical evidence of sustained progress in solo vocal or instrumental study over a period of not less than twelve months.

Files, compositions, etc., must be made available to the Examiner before the practical examination. Candidates will be questioned on their work at the examination. If evidence of progress in solo vocal or instrumental study is offered, this will be examined by the external examiner at the time of the practical examination.

SECTION D. EVIDENCE OF ENSEMBLE OR SOLO WORK

Candidates will be required to produce evidence, in the form of a signed attestation by the Head Teacher, in this section. No examination will be set and no marks awarded but failure to produce this evidence will restrict the final grading of the candidate to Grade III or lower, as determined by the complete examination.

Ensemble work might include duets, trios, quartets and larger combinations, including choirs, orchestras and bands. In general the aim should be to choose technically simple music of good quality and ensure that it is well performed. Out-of-school ensembles of good quality are equally acceptable.

MUSIC (South)

The examination will comprise four main sections :

A. Musical Literacy

There will be two parts designed to test

- (i) individual reading, 25%,
- (ii) individual listening, 25%.

Candidates will be required to sing or play a simple phrase at sight and to show that they can listen to music with some degree of analytical understanding.

B. Musical Knowledge

There will be two tests :

- (i) Set works, 15%.
- (ii) General musical experience, 20%.

Candidates should have an all-round knowledge of music at an elementary level, obtained from acquaintance with a fairly extensive repertoire and from general musical experience.

C. Individual Interest

15%.

Candidates should have pursued some individual musical interest.

D. Ensemble Work

Candidates must have taken part regularly in vocal or instrumental ensemble work during at least the two previous school years.

NOTES

A. MUSICAL LITERACY

(i) Individual Reading

This test will be set by the examiner and presented by the teacher, who will mark it according to a scheme provided by the examiner.

Singers will be required to choose either :

- (a) to sing a simple phrase at sight. To establish tonality, a short harmonised phrase, the key chord and first note will be played
- OR

- (b) to sing at sight the answering phrase to a phrase played on the piano. The candidate will have the melody of both phrases before him.

Instrumentalists will play at sight a simple piece of music. All singing and playing will be unaccompanied. The instrument offered in ensemble work must be used for the sight reading. The examiners will be looking for confidence in vocal or instrumental sight reading at quite an elementary level.

(ii) Individual Listening

The music for this test will be specially composed by the examiner. The Board will be responsible for getting it recorded. Answers will be recorded on prepared music paper provided by the Board.

The aim is to find out how much of the following detail a candidate can gather and record from a number of hearings of a short piece which is new to him :

time signature ; total number of bars ; instrumentation ; phrasing, dynamics and Italian terms ; simple form, e.g., A.A.B.A., rhythm. (This will be a continuation of a written part. More advanced candidates may feel able to continue the melody.)

Two alternative methods of testing may be used.

In the first, the candidate would be given a sheet of manuscript paper with bar lines already inserted, more bars being indicated than are necessary for the piece selected. The first hearing might be used for general reconnaissance and for determining the top figure of the time signature. The candidates should then count their way (silently) through the second hearing, putting a double line where they think the passage should end. At subsequent hearings more detail from the list above might be noted.

Alternatively, candidates might be given an incomplete copy of a simple instrumental piece in A.B.A. form. In the A section, the notes of the tune with their pitch and time values might be given, but nothing else; the B section might be barred but otherwise left blank. The test would be to add as much as possible to the copy during a number of hearings: e.g., in the B section to attempt the notation of the rhythm and perhaps the melody, and in the A section to indicate details from the above list. In both these methods it is expected that candidates would use the normal signs of notation (phrase marks, hair pins, etc.), and that very little verbal writing would be involved.

B. MUSICAL KNOWLEDGE

(i) *Set Works*

This test will be conducted by the teacher according to the examiner's instructions.

Candidates should be able to recognise by ear and eye thirty themes and answer simple oral questions based upon the background of the works (e.g., composer, place in history, etc.).

Each school must submit a list of at least ten works from which their candidates shall select thirty themes. These shall be representative of various periods and types of music, e.g., symphony, concerto and other orchestral music, chamber, instrumental and piano music, solo song, opera, oratorio and other types of choral music.

In addition to works in the standard repertoire, schools may care to select some from the list in the companion notes to the syllabus.

(ii) *General Musical Experience*

This test will be 30 questions requiring very short written answers. The questions will be recorded. The examiner will select the questions and the Board will be responsible for recording them.

No prescribed syllabus will be laid down but a wide selection of questions will be set, sufficient to cover all likely musical interests of the candidates. The following topics are offered merely as a guide:

Instruments of the orchestra. Recognition of instrumental combinations and chamber groups. Method of production of sound. Recognition of S.A.T.B. Knowledge of period styles. Figures of national and international standing in the serious and light music world. Brass bands. Church organs. Pianos and harpsichords. Lutes and guitars. Film music. Ballet. Folk music.

C. INDIVIDUAL INTEREST

The Visiting Examiner will interview candidates who have chosen (a) or (b). He will hear performances offered by candidates in the other sections (c), (d) and (e).

Candidates will offer a 'field study' comprising one of the following :

- (a) an original composition or arrangement, e.g., a melody with guitar accompaniment, a descant to a folk song, or a hymn arranged for S.A.B. or three recorders.
- (b) an illustrated project upon some musical topic, e.g., the history of jazz, famous musicians, local music making, recording, etc.,
- (c) the playing of a simple instrument (e.g., a xylophone, a fretted instrument or bamboo pipe) which has been made by the candidate,
- (d) a programme of specified length and scope chosen, annotated and performed by the candidate, perhaps with the help of other participants,
- (e) a solo vocal, or instrumental performance.

The following minimum standards for this section are offered as a guide :

Strings—equivalent to Associated Board Grade II.

Brass—equivalent to Associated Board Grade III.

Woodwind—equivalent to Associated Board Grade III.

Piano—equivalent to Associated Board Grade II.

Voice—equivalent to Associated Board Grade IV.

Guitar—equivalent to London College of Music, Grade III (melody and chords required).

(Fretted instruments including electric instruments to play melody and chords.)

Recorders. Chromatic harmonica. Melodica. Piano accordion. Organ. Timpani. Snare Drum—a drummer should give a short exhibition incorporating drumming technique. Glockenspiel, Xylophone.

Permission must be obtained before offering any instrument not mentioned above. The difficulty of the piece presented and the candidate's technical proficiency will be taken into consideration.

D. ENSEMBLE WORK

Ensemble work must be performed by at least two pupils (teachers and non-examination pupils may take part). The work may range from duets to choirs, orchestras and bands. Class ensemble work, e.g., class singing, may be offered.

In general, the aim should be to choose technically simple music of good quality and to ensure that it is well performed. The school should encourage free choice of material ; the examiners will comment annually upon the general acceptability of the works chosen. Candidates should submit to the examining body a list of works in which they consider themselves to have participated satisfactorily during the previous two years with an attestation by their Headmaster or Headmistress. The examiner may at his discretion hear examples of the work.

ADDITIONAL NOTES

In addition to the standard repertoire schools may care to select some works from the following list :

Symphonies

Bruckner	...	...	No. 7 in E
Dvorak	...	...	No. 6 in D
Elgar	...	...	No. 1 in A flat
Sibelius	...	...	No. 1 in E minor
Stravinsky	...	...	Symphony in three movements
Vaughan Williams	...	...	No. 2

Concertos

Bartok	...	...	Concerto for Orchestra
Brahms	...	...	Double Concerto in A minor
Falla	...	...	Harpichord Concerto
Shostakovitch	...	...	2nd Piano Concerto
Vivaldi	...	...	Concerto for three violins

Orchestral

Arnold	...	...	Scottish and English Dances
Copeland	...	...	Rodeo : Billy the Kid
Debussy	...	...	Nocturnes. No. 2 Fetes
Prokofief	...	...	Lieutenant Kije
Ravel	...	...	An American in Paris
Respighi	...	...	Ancient airs and dances for Lute

Chamber Music

J. C. Bach	...	...	Wind Quintets
Dvorak	...	...	String Quartet No. 6. in F
Haydn	...	...	String Quartet Op. 76 No. 2
Schubert	...	...	First Piano Trio in B flat
Schubert	...	...	String Quartet in C minor
Schubert	...	...	Octet in F
Schumann	...	...	Piano Quintet in E flat
Telleman	...	...	Concerto in B flat for 3 oboes and 3 violins

Instrumental Music

Bartok	...	...	Rumanian Folk dances for violin and piano
Beethoven	...	...	Sonata No. 5 in F for violin and piano
Frank	...	...	Sonata in A
Ravel	...	...	Sonatina
Scarlatti	...	...	Sonatas

Solo Song

Dowland	...	...	Ayres
Vaughan Williams	...	...	On Wenlock Edge
Villa Lobos	...	...	Bachiana Brasileira No. 5
Wolf	...	...	Lieder

Opera

Bernstein	...	...	West Side Story
Britten	...	...	Peter Grimes
Gershwin	...	...	Porgy and Bess
Borodin	...	...	Prince Igor
Verdi	...	...	Otello

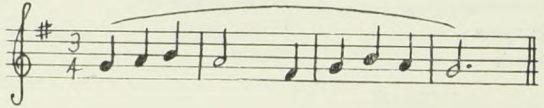
Oratorio and Choral

Bach	...	...	Cantatas
Brahms	...	...	Liebeslieder Waltzes
Faure	...	...	Requiem
Kodaly	...	...	Jesus and the Traders
Mozart	...	...	Exultate, Jubilate, Motet K 165
Purcell	...	...	Ode to St. Cecilia's Day 1692
Tippett	...	...	Child of our time
Vaughan Williams	...	...	Hodie
Vaughan Williams	...	...	In Windsor Forest
Vaughan Williams	...	...	O taste and see
Walton	...	...	Belchazzar's Feast
			Madrigals
			Modern Jazz
			Folk Songs

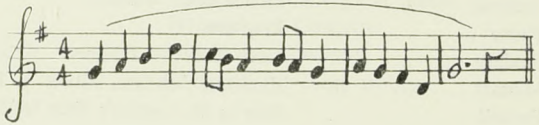
1. *Ensemble Work*, is a condition of entry and a list of candidates with the Headmaster's attestation is to be forwarded to the Board.
2. *Musical Literacy*
Individual reading—candidates taking part in ensemble work as singers will be required to sight-sing. The reading will be given in four graded tests. The candidates will be handled sympathetically and will be allowed two attempts for each test.
As a guide to teachers specimen tests of vocal reading are given below. The instrumental reading will be of a similar standard.
3. *Musical Knowledge*
Set works—when a work falls into definite sections, i.e., an act of an opera or a movement of a symphony one section may be studied.
General musical experience—Thirty questions will be asked requiring short answers. It is hoped that this part of the examination will be contained on a gramophone record which the Board will supply.
4. *Sight-singing Tests*
All tests will start on 'doh' unless an anacrusis is used which will be soh-doh ascending. All will be in a major key.

EXAMPLES OF TESTS FOR INDIVIDUAL READING
SECTION A (i)

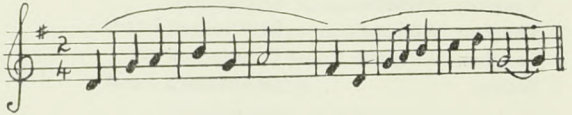
Example 1.



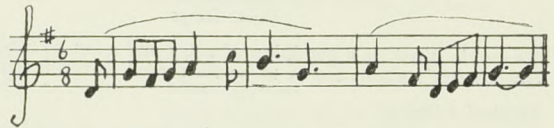
Example 2.



Example 3.

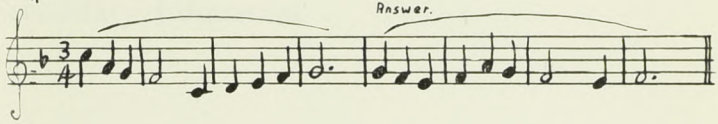


Example 4.

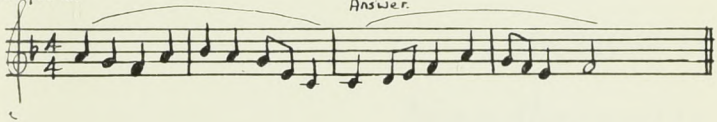


EXAMPLES OF TESTS FOR INDIVIDUAL READING
SECTION A (ii)

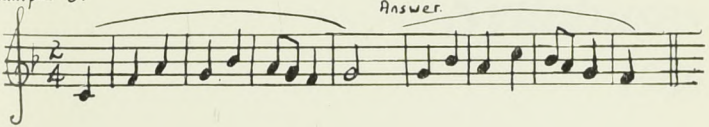
Example 1.



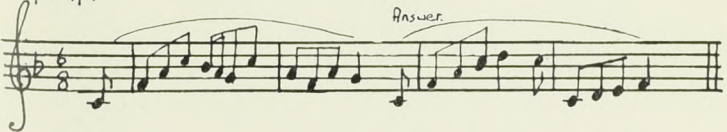
Example 2.



Example 3.



Example 4.



East Anglian
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SECTION 11

Needlecrafts
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

NEEDLECRAFTS

The Board offers Mode 1 examinations on three syllabuses, namely :
Embroidery (South)
Needlecraft (North)
Needlecraft (South)

SYLLABUSES

EMBROIDERY (South)

(a) *Course work 50%. (b) Practical test 5 hours duration 50%.*

It may be that a student has shown, during her basic three years Needlecraft course, an aptitude for design and an appreciation for colour and texture, indicating that she is a suitable candidate for the alternative course in Embroidery.

The syllabus will indicate the wide scope from which her choice of individual study for a further two years can be selected, giving such a student ample opportunity to develop her knowledge and skill which can prove a valuable asset in her post school days.

It is expected that designs will be the candidate's original work.

A study of the following

1. Various methods of designing for embroidery and applying to fabric.
2. Fabrics and threads.
3. Tools and equipment.
4. Basic stitchery and techniques.
5. Traditional embroidery, e.g., quilting, appliqué, counted thread, smocking, feather stitchery, Jacobean.
6. Contemporary interpretations of the above, which may include machine embroidery.

1. COURSE WORK

- (a) *A folder* of sketches, samples, reference books, etc., and an individual study of some aspect or aspects of the syllabus.
- (b) *Two articles* showing different types of embroidery, one, at least, to be completely finished and made up. Working drawings, etc., should be included.

2. PRACTICAL TEST

The paper, which will give a choice of subjects, is to be handed to the candidate one month before the date of the Test, so that she can study it, make her choice, work out her design on paper and select fabric and threads.

All preparatory work, such as sketches, etc., may be used during the examination period, and must be submitted with the test piece.

No work may be done on the fabric before the actual examination.

The examination period will consist of two sessions, making a total of five hours.

Materials for the test will be provided by the candidate or by the school.

The work will be returned to the school after it has been marked.

NEEDLECRAFT (North)

(a) *Written paper of 1½ hours duration 20%. (b) Practical test 3 hours plus 1 hour preparation 40%. (c) Course work 40%.*

Needlecraft has an important part to play in the balanced education of every schoolgirl. A broadly based course of true educational value will encourage pupils to use the fund of knowledge available in text books, pamphlets, periodicals and good reference libraries.

Full advantage will also be taken of the opportunities offered locally for carefully prepared visits to Art Galleries, Museums, Exhibitions, Textile Factories and Department Stores.

It is hoped that the candidates will have a sound practical experience of Needlecraft and that the fourth and fifth year work will be an extension and a development of their previous work.

The syllabus has been based on an assumed weekly teaching time of at least one session of two and a half hours for practical work and one timetable period for theory in each of the two years preceding the examination.

SYLLABUS

1. *Equipment*

Choice, use and care of needlework tools and equipment, including sewing machines.

2. *Fabrics*

A practical knowledge of fabrics and fibres, including colour, texture and design, sufficient for a sensible choice of materials for the family wardrobe and household furnishing.

3. *Design*

A study of styles with relation to figure types, fabrics and purpose.

4. *Planning and Budgeting*

Planning and budgeting for a personal wardrobe. Outfits and suitable accessories for different occasions.

5. *Care of Clothing and Personal Good Grooming*

6. *Choice and Use of Commercial Patterns*

Taking personal measurements, and simple adaptations for size.

7. *Fitting*

Fitting of garment during construction.

8. *Processes*

(a) *Stitches.* Tacking, running, hemming, slip hemming, tailor tacking, loopstitch, overcasting, oversewing, buttonhole stitch, back stitch and herringbone.

(b) *Seams.* Plain (using various methods of neatening), French, double machined and overlaid.

(c) *Fastenings.* Press studs, worked loops, hooks and eyes, zips, buttonholes and buttons (machine-made buttonholes will be accepted).

(d) *Disposal of Fullness.* Darts, gathers and pleats.

(e) *Openings.* Continuous and faced.

- (f) *Use of interfacings.*
- (g) *Neck Finishes.* Collars—Peter Pan and straight. Shaped facings.
- (h) *Bindings.* Preparation and use of crossway strips for bindings, facings and decoration. Use of commercial bias binding.
- (i) *Sleeves.* 1. Ordinary set in sleeve. 2. Magyar without a gusset. 3. Raglan sleeve. Short sleeved cuff, and attaching a simple overlapped cuff with an opening (not linked).
- (j) *Waist bands.* Making and attaching soft and stiffened waist bands.
- (k) *Pockets.* Patch pockets.
- (l) *Hems.* Hems suitable for thick and thin materials (excluding circular hems).

9. *Pressing of Garments*

Pressing of garments during and after construction. Use of suitable pressing equipment.

FORM OF EXAMINATION

1. *The Written Test* will be in two sections :

- (a) Twenty short questions.
- (b) A choice of two out of four more searching questions.

2. *Practical Examination*

The examination will be in two parts :

- (a) A planning period of one hour at least two days before the practical test, during which the candidate will study the test set and decide on processes to be used.
- (b) A three hours practical test during which time the candidate will be asked to make up part of a garment.

Instruction sheets and reference books may be used throughout both parts of the examination.

Pattern and material will be selected and provided by the Board.

Ample pressing facilities are to be provided and a minimum of one machine between two girls.

3. *Course Work*

- (a) One garment (not necessarily for the candidate).
- (b) One optional piece of work.

This may be :

- (i) *A second garment.*
- (ii) *Embroidery* which may show the use of embroidery on garments (e.g., smocking, hem stitching or attaching lace to underwear), or any one country's embroidery, or embroidered household linen or toys.
- (iii) *Soft Furnishings.* An article to show processes required in making curtains, cushions, bed covers, etc., where these differ from those required for clothing, e.g., mitring of corners, piping, application of rufflette tape, quilting.
- (iv) *A special study.* A folder must be produced showing that the candidate has done some research into the subject of her choice, e.g., embroidery, textiles made from natural and man-made fibres; wardrobe planning; household furnishing—patterns and designs.

All course work is to be carried out in the two years preceding the examination.

NEEDLECRAFT (South)

(a) *Written paper* 1 hour duration OR an oral test 20%. (b) *Practical test* 2½ hours duration plus ½ hour preparation time 30%. (c) *Course work* 50%.

The syllabus is based on the assumption that the candidate will have had a good basic course of Needlecraft for at least three years prior to the examination year.

It sets out to encourage :

- (a) a good practical standard of needlework skills,
- (b) an interest in, and awareness of, current trends in dress, furnishings and textiles,
- (c) a link with other subjects (Art, History, Drama, etc.),
- (d) the individual interests of girls with some originality.

Thus it is hoped to make available to the girls a hobby that will prove both satisfying and useful.

The candidate will be expected to have a working knowledge of the following :

Techniques used in modern dressmaking.

The use and care of equipment.

Fibres and Fabrics.

Fashion and good grooming.

Buying and budgeting for her clothes.

The use of commercial patterns and how to make simple alterations.

Simple decorative stitchery.

I. *Written Paper or Oral Examination*

The candidate shall opt for one or the other.

In the *written* test there will be a choice of a number of questions requiring short answers and sketches.

The *oral* test will be conducted by the visiting Examiner, who will discuss with the individual candidate (for 5 to 10 minutes) any parts of the syllabus or course work.

II. *Practical Test*

The preparation period (as a rule not *more* than 24 hours previously) will be used for studying the pattern, material and instructions.

The *Test* will comprise, as far as possible, a complete unit of a garment. The Board will provide pattern, instructions and suitable fabric. Schools will be given adequate notice of other items needed for the test.

III. Course Work

This to comprise :

- (a) Folder or notebook covering an *individual study* of a related topic (written, with sketches, samples, etc.).

The following are offered as suggestions only :

1. A study of a particular type of embroidery.
2. Embroidery with a geographical aspect.
3. A study of textures.
4. Machine embroidery.
5. A study of a local textile industry.
6. Some form of fashion study.
7. Fibres and fabrics.
8. A log book related to the course.

- (b) A *garment* to include three of the following processes :

1. Collar. 2. Set in sleeve. 3. Opening with appropriate fastening.
4. Pocket. 5. Yoke. 6. Disposal of fullness (other than darts).
7. Belt or waistband. 8. Lining and/or interfacing.

- (c) A *second article* of candidate's own choice, showing use of a different type of fabric. This could be any of the following :

1. Another garment. 2. Soft furnishing. 3. Soft toy or dressed doll.
4. Embroidery. 5. Accessories. 6. Drama costume.

The candidate should be given as wide a choice as possible for her course work so that the garments need not necessarily be made for herself.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 12

Religious Education
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

RELIGIOUS EDUCATION (North)

(a) Paper I $1\frac{1}{2}$ hours duration plus 10 minutes reading time 50%. (b) Paper II $1\frac{1}{2}$ hours duration plus 10 minutes reading time 50%.

All candidates will take Paper I Section A or B, and Paper II selected from Sections C to G.

Any translations of the Bible may be used, in preparing for the examination, and questions will not depend on a particular rendering.

In view of the fact that this syllabus will be in the schools only about four terms before the examination, no course or topic work is included for 1966.

Notes

COMPULSORY SECTION

Section A. The Life and Teaching of Jesus Christ.

or

Section B. The Life of Christ as recorded in St. Luke's Gospel.

A choice is provided to enable those who prefer to do so to study a Gospel as a whole rather than cover the same material under selected headings.

OPTIONAL SECTIONS

Section C. The Revelation of God through the Old Testament as seen in the lives of outstanding personalities. Special attention should be paid to the introductory note. The object of this study is to present the unfolding knowledge of God which came to the Hebrew People in the course of their history. It should be clearly understood that the interest is theological rather than historical.

Section D. The Story of the early Church as recorded in the book of the Acts of the Apostles. No specific passages are suggested for particular study from the Acts of the Apostles, but the topics listed are intended to suggest an approach to the book as a whole.

Section E. Church History from the time of the Romans to 1689.

Section F. Church History from 1689 to the present day.

These two sections are included to avoid giving the impression that the significant development of Christianity ended with the Canon of Scripture. It should be understood that there is no question of an overlap with "History" here. The intention is that the study should be directed to seeing how the Church down the ages has wrestled with various problems and challenges which have been forced upon it by its historical circumstance and the solutions, or alternative solutions, it has found. As in the Old Testament study (Section C) the emphasis is more on the theological importance of events than their actual occurrence. Two examples of this approach to the topics in these syllabuses are now given. In the study of the Elizabethan Settlement in England the interest would be more in the contrast in view between those who looked to Geneva for a model and those who proposed the Settlement, than in the mere sequence of events. Again, in attempting to follow the Missionary Enterprise, attention would be focussed on the overall aims the missionaries were pursuing than on their adventures; for instance, in the case of Livingstone, what he was attempting to achieve is of more importance than the details of any special episode such as his meeting with Stanley.

Section G. The Application of Christian Principles to Modern Life.

It must be clearly realised that in the examination personal views on any subject under review will not be required. What is desired is that in the course of study some awareness should arise of the point of view presented in the Biblical narrative whether such a view commands personal agreement or not.

SECTION A. THE LIFE AND TEACHING OF JESUS CHRIST

I. *Birth and Early Life*

Matt. 1 vv. 18-25. Matt. 2 vv. 1-23. Luke 1 vv. 26-39. Luke 2 vv. 1-52.

II. *Preparation for the Ministry*

- (a) The Forerunner Luke 3 vv. 1-20.
- (b) Baptism Matt. 3 vv. 13-17.
- (c) Temptation Matt. 4 vv. 1-11.

III. *Public Ministry*

A. JESUS AMONG MEN

- (a) Call of the disciples John 1 vv. 35-51. Mark 1 vv. 14-20. Mark 2 vv. 13-17. Luke 6 vv. 12-16.
- (b) The Woman who was a Sinner Luke 7 vv. 36-50.
- (c) Zacchaeus Luke 19 vv. 1-10.
- (d) Nicodemus John 3 vv. 1-12.
- (e) The Woman of Samaria John 4 vv. 3-30 ; vv. 39-42.
- (f) Martha, Mary, Lazarus Luke 10 vv. 38-42. John 11 vv. 1-46.
- (g) Come unto Me Matt. 11 vv. 28-30.

B. MIGHTY ACTS

- (a) Jairus' Daughter (and the Woman) Mark 5 vv. 21-43.
- (b) Centurion's servant Luke 7 vv. 1-10.
- (c) In Capernaum Mark 1 vv. 21-39.
- (d) Healing a Leper Mark 1 vv. 40-45.
- (e) Feeding the 5,000 Mark 6 vv. 31-45.
- (f) Walking on the Sea Mark 6 vv. 46-56.
- (g) Stilling the Storm Mark 4 vv. 35-41.
- (h) The Paralytic Mark 2 vv. 1-12.

C. TEACHING

1. *Prayer*

- (a) How to Pray Matt. 6 vv. 5-15.
- (b) Friend at Midnight Luke 11 vv. 1-13.
- (c) Unjust Judge Luke 18 vv. 1-8.
- (d) Pharisee and Publican Luke 18 vv. 9-14.

2. *Discipleship*

- (a) Three Would-be disciples Luke 9 vv. 57-62.
- (b) The Rich Young Ruler Mark 10 vv. 17-31.
- (c) Denying self Mark 8 vv. 34-38.
- (d) The cost Luke 14 vv. 25-35.

3. *Stewardship*

- (a) Parable of the Talents Matt. 25 vv. 14-29.
- (b) Parable of the Rich Fool Luke 12 vv. 13-21.
- (c) Parable of the Unjust Steward Luke 16 vv. 1-13.

4. *Parables*

- (a) The Sower Mark 4 vv. 1-20.
- (b) Lost sheep—coin—son Luke 15 vv. 1-32
- (c) Good Samaritan Luke 10 vv. 25-37.
- (d) Unforgiving Servant Matt. 18 vv. 21-35.
- (e) Ten Virgins Matt. 25 vv. 1-13.
- (f) Great Supper Luke 14 vv. 15-24.
- (g) Two Builders Matt. 7 vv. 24-27.

5. *Sermon on the Mount*

- (a) True happiness Matt. 5 vv. 1-12.
- (b) Loving enemies Matt. 5 vv. 43-48.
- (c) Alms, Prayer, Fasting Matt. 6 vv. 1-18.
- (d) Trustfulness Matt. 6 vv. 25-34.
- (e) Doers of the Word Matt. 7 vv. 24-27.

IV. *Reaction to His Ministry*

1. *Growth of Opposition*

- (a) Friend of sinners Mark 2 vv. 13-17.
- (b) Sabbath breaker Mark 2 vv. 23-28.
- (c) Forgives sins Mark 2 vv. 1-12.
- (d) Sequel to raising of Lazarus John 11 vv. 47-54.

2. *Peter's Confession* Mark 8 vv. 27-33.

- (a) The Transfiguration Mark 9 vv. 2-10.
- (b) The Epileptic Mark 9 vv. 14-32.

3. *Towards Jerusalem*

- (a) Setting out Luke 9 vv. 51-56.
- (b) Suffer the Little Children Mark 10 vv. 13-16.
- (c) Rich Young Ruler Mark 10 vv. 17-31.
- (d) Shadow of the Cross Mark 10 vv. 32-34.
- (e) Request of James and John Mark 10 vv. 35-45.
- (f) In Jericho : Bartimaeus Mark 10 vv. 46-52.
Zacchaeus Luke 19 vv. 1-10.

V. *Holy Week*

1. (a) *Triumphal Entry* Luke 19 vv. 28-40.

- (b) Weeps over the City Luke 19 vv. 41-44.
- (c) Cleansing of Temple Mark 11 vv. 15-19.
- (d) Questions : (Authority) Mark 11 vv. 27-33.
(Taxes) Mark 12 vv. 13-17.
(First Commandment) Mark 12 vv. 28-34.
- (e) Prophecies Mark 13 vv. 1-37.

2. *Betrayal, Arrest, Crucifixion*

- (a) Betrayal Mark 14 vv. 10-11.
- (b) Last Supper Mark 14 vv. 12-25.
- (c) Gethsemane Mark 14 vv. 26-42.
- (d) Arrest Mark 14 vv. 43-52.
- (e) Trial before Caiaphas Mark 14 vv. 53-66.
- (f) Denial Mark 14 vv. 66-72.
- (g) CRUCIFIXION Mark 15 vv. 1-47. Matt. 27 v. 19.
Matt. 27 vv. 24-25. Luke 23 vv. 1, 2 and 34.

VI. *Resurrection and Ascension*

- (a) The Women at the Tomb Mark 16 vv. 1-8.
- (b) Peter and John at the Tomb John 20 vv. 1-10.
- (c) Appearance to Mary Magdalen John 20 vv. 11-18.
- (d) Appearance in the Upper Room John 20 vv. 19-23.
- (e) Appearance to Thomas John 20 vv. 24-31.
- (f) On the road to Emmaus Luke 24 vv. 13-35.
- (g) Ascension Luke 24 vv. 46-53.

SECTION B. THE LIFE OF CHRIST AS RECORDED IN ST. LUKE'S GOSPEL

SECTION C. THE REVELATION OF GOD THROUGH THE OLD TESTAMENT AS SEEN IN THE LIVES OF OUTSTANDING PERSONALITIES

Note : The key passages for understanding the lives of the personalities selected are given in each instance. It is expected that the relevant historical background will be provided by the teacher though questions will not be set on this as such. The object of the study is to discover how each personality mediated an understanding of God through his own life and in his response to the historical situation.

ABRAHAM—the man of faith and obedience and the receiver of the Covenant
The Call of Abraham and his journey Genesis 11 vv. 31-32.
Genesis 12 vv. 1-9. Cf. Hebrews 11 v. 8.
The promise of God Genesis 13 vv. 14-18.
The challenge of obedience Genesis 22 vv. 1-19.

MOSES—a saviour sent by God and the giver of the Law
The early life and call of Moses Exodus 1 vv. 8-22, Exodus 2
Exodus 3 Exodus 4 vv. 1-23.
A poetic description of the "mighty acts" in Egypt and after
Psalm 105 vv. 26-45.
The Exodus Exodus 12 vv. 1-36.
The giving of the Commandments Exodus 19 vv. 1-2, 16-19.
Exodus 20 vv. 1-24.
A final estimate Deuteronomy 34 vv. 10-12.

DAVID—the pattern for all rulers and the Theocratic King
His selection for the Kingship 1 Samuel 16 vv. 1-13.
Danger in his early years 1 Samuel 18 vv. 8-14.
1 Samuel 20 vv. 1-42.
His magnanimity 1 Samuel 24 vv. 1-16.
Receiving the kingdom 2 Samuel 5 vv. 1-12.
God's dealing with David 2 Samuel 7.
Charged with sin 2 Samuel 12 vv. 1-14.
A desire denied 1 Chron. 28 vv. 1-7.
His last testament 1 Kings 2 vv. 1-4.

ELIJAH—a man of zeal for God
A challenge to be met 1 Kings 16 vv. 29 and 33.
His protest 1 Kings 17 vv. 1-16, 1 Kings 18.
Limiting the king's power 1 Kings 21 vv. 1-20.

AMOS—the preacher of righteousness and the one God for all
Facts about Amos Amos 1 v. 1, Amos 7 vv. 14-15.
His demand for good living Amos 7 vv. 7-9, Amos 8 vv. 4-8.
Amos 5 vv. 14-15 and 24.
The universality of God Amos 9 v. 7.

HOSEA—the prophet of loving kindness

- The story of Gomer Hosea 1 vv. 2-9. Hosea 3 vv. 1-5.
- Hosea's view of the love of God Hosea 11 vv. 1-4
- Hosea 14 vv. 1-4.

ISAIAH—the prophet with a sense of the holy

- His call Isaiah 6 vv. 1-8.
- His parable of the failure of his people Isaiah 5 vv. 1-10.
- His message to the kings Isaiah 7 vv. 1-9. Isaiah 36. Isaiah 37.
- His explanation of the foreign invasion Isaiah 10 vv. 1-6.
- The proper response to deliverance not given Isaiah 22 vv. 12-14.
- His teaching about the Remnant and the Messiah Isaiah 11.

JEREMIAH—the man who found God in his suffering

- His call Jeremiah 1 vv. 1-10.
- His speech in the Temple Jeremiah 7 vv. 1-15.
- The parable of the Potter Jeremiah 18 vv. 1-10.
- The announcement of doom Jeremiah 19 vv. 1-2 and 10-11.
- His persecution Jeremiah 20 vv. 1-3.
- Persistent witness Jeremiah 36 vv. 1-23 and 32.
- Further advice and suffering Jeremiah 38 vv. 1-18 and 28.
- His hope Jeremiah 31 vv. 3-34.

THE UNKNOWN PROPHET—the man with the vision of the Redeemer

- In a foreign king he sees a deliverer for the Exiled People
- Isaiah 45 vv. 1-4.
- His doctrine of God as Redeemer and Creator Isaiah 40.
- His teaching of the "suffering servant" Isaiah 52 vv. 7-15.
- Isaiah 53.

SECTION D. THE STORY OF THE EARLY CHURCH AS RECORDED IN THE
BOOK OF THE ACTS OF THE APOSTLES

The Inception of the Christian Church in Jerusalem

- After the Ascension
- The Giving of the Holy Spirit
- The witness and persecution of the Apostles
- The witness of Stephen and the scattering of the Church
- Life in the church during the early years

The Spreading Church

- The Mission of Philip
- Accepting a Gentile (Cornelius)

Into the Roman World—the work of Paul

- Paul's background
- Paul's commission and apostleship
- Paul the traveller

Paul's strategic ministeries

- At Pisidian Antioch
- At Philippi
- At Corinth
- At Ephesus
- At Rome

SECTION E. CHURCH HISTORY FROM THE TIME OF THE ROMANS TO 1689

The persecution of the Church in the Roman Empire

Persecution in Rome under Nero.
Sporadic persecution ; the persecution of Decius and Cyprian's reply.
Persecution by Diocletian—The Story of Alban.

The Recognition of Christianity

The Edict of Constantine the Great. Christianity in Early Britain.
The Division between East and West.
The Story of Augustine of Hippo and Benedict.

Christianity in the Dark Ages

The work of Columba and Augustine of Canterbury.
The Conversion of East Anglia by Felix.
The Martyrdom of Edmund.

The Medieval Church

The building of the Parish Churches.
The life and work of the Monasteries, and the Mendicant Orders.
The conflict of Church and State as seen in the story of Thomas á Becket.

The Rediscovery of the Bible

The Bible until the Reformation—the story of Jerome, and the Vulgate.
Translation into the Vernacular—the story of Tyndale and the Authorised Version.
The Douai Version.

The Reformation and the Counter Reformation

Luther and Calvin.
The Elizabethan Settlement in England—the compiling of the Prayer Book.
The Council of Trent.
The development of "Dissent" in England.

SECTION F. CHURCH HISTORY FROM 1689 TO THE PRESENT DAY

Later developments

(In Britain in particular)

John Wesley and the founding of the Methodist Church
The Oxford Movement and John Henry Newman
The Evangelical Revival
William Booth and the Salvation Army

The development of the Social Conscience, leading to improvements in the conditions of life and work, as seen in the lives of outstanding reformers.

Elizabeth Fry and John Howard
Robert Raikes
Charles Kingsley
Lord Shaftesbury
William Wilberforce
Dr. Barnardo
William Temple

Biographical details will not be examined.

The Missionary Enterprise

The Founding of the Missionary Societies, including the British and Foreign Missionary Society.

The story of William Carey, David Livingstone, Alexander Mackay, Mary Slessor, Albert Schweitzer, Gladys Aylward.

Knowledge of detail is not expected.

The Church in the Modern World

The "indigenous" Church; the crowning of the Missionary enterprise. The striving for unity:

The Ecumenical Movement—from the Edinburgh Conference (1910) to the formation of the World Council of Churches.

The Church of South India.

The work of Pope John and the Vatican Council.

SECTION G. THE APPLICATION OF CHRISTIAN PRINCIPLES TO MODERN LIFE

From the five sub-sections (I-V) in this syllabus candidates will answer from only three sections. Questions will be set on the biblical passages as illustrative of the problem under discussion.

I. *Problems of personal relationships*

1. *Authority—parents and children, school life*

(a) The absolute authority Luke 14 vv. 26-28.

(b) The 5th commandment Exodus 20 v. 12.

(c) Christians do not live separately Romans 12 vv. 3-5.
Romans 14 vv. 7-8.

(d) Belonging to each other 1 Corinthians 12 vv. 13-31
1 Corinthians 13.

(e) The Authority of Jesus Mark 1 vv. 21-28.

(f) You matter to God and so does everyone else Luke 15 vv. 1-10;
11-34.

(g) Family feelings Colossians 3 vv. 18-23.

(Topics would cover questions on freedom and responsibility within home and school.)

2. *Friendship and Loyalty*

(a) We owe absolute loyalty to God Mark 12 vv. 30-31.

(b) Jesus was loyal to his friends John 15 vv. 12-14.

(c) The friendship of David and Jonathan

(d) Quarrelling about our "Rights" Luke 22 vv. 24-29.

(e) Be ready to admit you are wrong Matt. 5 vv. 23-24.

(f) The dangers of greed Luke 12 vv. 13-15.

(Topics on the implication of friendship, of loyalty, forgiveness.)

3. *Sex and Marriage*

(a) Advice on right living Matt. 5 vv. 27-30, Ephesians 6 vv. 10-17.
Philippians 4 vv. 6-8, 1 Corinthians 6 vv. 18-20.

(b) The strange woman Proverbs 7 vv. 6-27.

(c) Marriage is a partnership for life Mark 10 vv. 2-12 Matt. 5 vv. 31-32.

(Topics on boy and girl relationships.)

II. Problems of Personal Responsibility—Stewardship

1. Aim in Life

- (a) Partnership with God Genesis 1 vv. 27-28.
- (b) And with other people Luke 6 vv. 32-38.

2. Our attitude to Money

- (a) The widow's mite Mark 12 vv. 41-44.
- (b) Getting money and its dangers Matt. 6 vv. 19-24. Mark 10 vv. 17-22. Luke 12 vv. 13-21.
- (c) Using money Luke 12 vv. 32-34. Mark 14 vv. 3-8. Matt. 6 vv. 2-4.
- (d) The wrong use of money 1 Tim. 6 v. 10.
- (e) Generosity 2 Corin. 8 vv. 1-15. Acts 6 vv. 1-6.

3. Our attitude to Work

- (a) Jesus did God's Work John 5 vv. 16-18.
- (b) Everybody ought to work 2 Thessalonians 3 vv. 6-12.
- (c) Work willingly Ephesians 6 vv. 5-8.

4. Our attitude to Leisure

- (a) The marriage at Cana John 2 vv. 1-11.
- (b) The feast at Matthew's house Luke 5 vv. 27-35.

5. Worship and the Purpose of Sunday

- (a) Christ's own example Mark 2 vv. 27-28.
- (b) The purpose of Sabbath Exodus 20 v. 8.

6. Our use of our talents

- (a) Parable of the Pounds Luke 19 vv. 12-27.
- (b) Different gifts 1 Corinth. 12.

7. Personal conduct—honesty, choice and responsibility

- (a) The law of witness and false witness Deuter. 19 vv. 15-21.
 - (b) We are to say what we mean and mean what we say Matt. 5 vv. 36-37.
 - (c) Teaching about truth Rom. 13 vv. 8-10.
 - (d) Call to take responsibility Jeremiah 1 vv. 4-10.
 - (e) Responsibility for self and others 1 Corinth. 10 vv. 23-24.
 - (f) Accepting responsibility Mark 10 vv. 32-35.
 - (g) You cannot be neutral Luke 11 vv. 18-23.
- (Topics on one's job, ambition, responsibility, purpose in life.)

III. Problems of Society

1. The Colour problem, Race and Class Prejudice

- (a) "It's none of my business" The Story of Jonah The Good Samaritan
- (b) "Why should I care?" Luke 23 vv. 33-35. 1 John 4 v. 19.
- (c) "Is life fair anyway?" Parable of the labourers in the vineyard.

2. The Christian Conscience

and the use of Force, Capital punishment, Corporal punishment, War and pacifism.

IV. *Problems of meaning*

1. *Suffering*

Aim to show that individual suffering is not punishment from God and that where evil exists, suffering is bound to come.

- (a) Job's two trials Job 1 vv. 8-22. Job 2 vv. 3-10.
- (b) Some questions to Job Job 38 vv. 1-7; 16-22; 25-27; 39-41. Job 39 vv. 13-20; 26-27. Final outcome for Job Job 42 vv. 10-17.
- (c) Unmerited suffering Luke 13 vv. 1-5.
- (d) Relieving the suffering of others Luke 10 vv. 30-37.
- (e) Meeting suffering with love Mark 15 vv. 1-39.
- (f) Parable of wheat and tares Matt. 13 vv. 24-30; 36-43.
- (g) Parable of labourers in the vineyard Matt. 20 vv. 1-16.

(Topics on the problems of suffering and the belief in a loving God.)

2. *Death and Judgment*

- (a) Life does not just "go on" the same way after death Matt. 22 vv. 23-32.
- (b) Eternal Life John 17 v. 3.
- (c) The sheep and the goats Matt. 25 vv. 31-46.
- (d) The return of the Lord Luke 12 vv. 35-38.
- (e) Jesus cares for 'bad' people Luke 5 vv. 27-32.
- (f) God seeks rather than punishes Luke 15 vv. 1-7.

(Topics on life after death.)

V. *Our Relationship with God*

1. *Is the Bible true?*

2. *What is prayer? Is prayer necessary?*

- (a) Christ's example Mark 1 v. 35.
- (b) Christ's teaching Matt. 6 vv. 5-15. Praise Psalm 145. Thanksgiving 1 Thess. 5 v. 18. Confession 1 John 1 vv. 5-9. Prayer for others Luke 8 vv. 41-42; 49-56. Asking Matt. 18 vv. 19-20. Ephesians 3 vv. 14-16.

3. *Why do Christians go to Church?*

- (a) Jesus' Custom Luke 4 v. 16.
- (b) Example of the first Christians Acts 2 vv. 42-46, Acts 12 v. 12. Acts 16 v. 5.
- (c) Why do people go to church now?
- (d) Can you be a Christian on your own?
- (e) Can you stay a Christian on your own?

RELIGIOUS EDUCATION (South)

- (a) Paper I 2 hours duration 30%. (b) Paper II 2 hours duration 30%.
(c) Course work 40%.

EXAMINATION NOTES

The examination shall be in 3 parts, viz. :

1. Paper I on the New Testament.
2. Paper II will be on one of four sections :
 - A. Old Testament.
 - B. Church History.
 - C. Christian History after the Acts of the Apostles.
 - D. Practical Christianity.
3. Either (a) a project or (b) course work.

In each written paper there will be :

- (a) 20 compulsory short answer questions ;
- (b) questions requiring a paragraph answer of which two must be attempted ;
- (c) questions requiring an essay type answer or a Bible study passage of which two must be attempted.

Quotations used in examination papers will be from the Authorised Version or the Douai Bible. This is not intended to preclude teachers from using any other version in the preparation of their pupils.

SYLLABUS

PAPER I

New Testament

The Life and Teaching of Jesus Christ using the Gospel of St. Mark as the basis, with the following additional material :

- (a) Birth stories from Matthew and Luke.
- (b) Matthew 13 (Parables of the Kingdom).
- (c) Luke 10 vv. 25-37 (The Good Samaritan).
- (d) Luke 15.
- (e) Luke 18 vv. 1-14.
- (f) Luke 24.
- (g) John 20 and 21.
- (h) Acts of the Apostles 1 vv. 1-14. (The Ascension).
- (i) Meaning of the Incarnation.

Old Testament Prophecy : Emmanuel Isaiah 7 v. 14 ; Deliverance Isaiah 9 vv. 6-7 ; Kingdom of the Messiah Isaiah 11 vv. 1-9. Fulfilment John 1 v. 14.

PAPER II

Section A. Old Testament

The teacher will introduce such biographical and historical material as is necessary to show that Biblical Religion is historical, but the main concern of the syllabus is with the concept of God.

Creation and Fall stories Gen. 1-7.

Abraham

God's Call and Promise Gen. 11 vv. 31-32 ; 21 vv. 1-9.

Covenant Gen. 15 vv. 1, 18 ; 17 vv. 1-9.

The Sacrifice of Isaac Gen. 22 vv. 1-19.

Moses

- The God who calls and is known Ex. 3 vv. 1-14.
- The God who delivers : The Passover Ex. 12 vv. 1-36. The Red Sea Ex. 14.
- The God of Law: Ten Commandments Ex. 19 vv. 1-9; 20 vv. 1-17.

Joshua

- God in a New Land Josh. 24 vv. 1-28.

Elijah

- Which God to choose? 1 Ki. 18 vv. 17-46.
- Elijah at Mt. Horeb 1 Ki. 19 vv. 1-21.
- Law for King and People 1 Ki. 21 vv. 1-20; 27-29.

Amos

- The Situation of Social Injustice Am. 8 vv. 4-6; 6 vv. 7-9.
- The Religious Situation Am. 3 vv. 1-3; 4 vv. 4-5.
- The Answer to the Situation Am. 5 vv. 4-15.
- God's Judgment Am. 5 vv. 16-24.
- The Restoration Am. 9 vv. 11-15.

Hosea

- Yahweh and His people Hos. 11 vv. 1-4.
- The Social Situation Hos. 4 vv. 1-3.
- The Religious Situation Hos. 4 vv. 7-13.
- The Call to Repentance Hos. 5 v. 15; 6 v. 6. (Compare Micah 6 vv. 6-8).
- The Loving kindness of God Hos. 14 vv. 1-9; 11 vv. 8-11.

Isaiah of Jerusalem

- The Holiness of God Isa. 6 vv. 1-8.
- The "Holiness" of the People : Separation from other gods and Peoples Isa. 36-37. (Compare 2 Ki. 18 v. 28; 19 v. 19).
- Trust in God Isa. 30 vv. 15-16.

Jeremiah

- Individual Religion and Responsibility The New Covenant Jer. 31 vv. 27-40.
- The Certainty of Victory Jer. 32.

Ezekiel

- The Omnipresence of God Ezek. 1 vv. 1-28.
- God identifies Himself with the people through the prophet Ezek. 3 vv. 4-15.
- God is not destroyed with the City Ezek. 11 v. 23.
- Individual Responsibility Ezek. 18 vv. 19-32.
- False Shepherds of Israel Ezek. 34 vv. 1-16.
- The Restoration by the Spirit before Repentance Ezek. 37 vv. 1-28.

Deutero-Isaiah

- False Religion Isa. 44 vv. 9-18.
- True Religion Isa. 40 vv. 12-31.
- God Controls the Peoples Isa. 44 v. 29; 45 v. 8.
- God will save His People Isa. 45 vv. 22-25.
- God works through His Servant Isa. 52 v. 13; 53 v. 12.

Malachi

- The Messenger Mal. 3 v. 1.
- The Message for all Mal. 1 v. 11; 3 v. 6.
- God will send another Messenger Mal. 4 vv. 1-6.

Jonah

- The Missionary Message of the Old Testament The Breadth of Post-Exilic Judaism Jonah 1-4.

Ruth

- God is concerned with all peoples Ruth 1-4.

Section B. Church History

The History of the Church as represented in the Acts of the Apostles. Particular reference may be made to the Revised Bristol Syllabus, Secondary Section, Third Year (Alternative) "Growth of the Church to A.D. 65".

Section C. Christian History after the Acts of the Apostles

The link between the New Testament and the life of the world today is made by the history of the Christian Church. This link will not be made and the Christian past will not live again in the minds of children, unless we make three things unmistakably clear :

1. The Church of Christ is the living continuation of His work through the ages and today.
 2. The Church of Christ, in spite of all its divisions, is one Church.
 3. The Church in the local area, embodied in many Churches and Chapels and in people of many denominations, is the same Church as the Church of the New Testament, that is, it is the People of God and the Body of Christ in the area.
1. What Churches and Chapels are there in your neighbourhood? Church of England? Presbyterian? Congregationalist? Society of Friends? Baptists? Methodists? Others? When were they built, and what are the differences in their architecture and arrangement?
 2. The various denominations are in the one Church of Christ. The different forms of worship of the various denominations. Their different teaching about the ministry and the sacraments. Their essential oneness in the greatest matters of faith.
 3. The Church of today goes back to the Church of the Apostles. After the death of the Apostles the Church had the same Gospel and the same Bible as it has today. With these it faced the pagan world and the power of the Roman Empire; it spread to the frontiers of the Empire and produced many martyrs (Justin, Polycarp, Alban). It often had to meet in the Catacombs. An Easter morning service in Rome in A.D. 200.
 4. The Faith comes to Britain. British and Saxon Christians at Glastonbury. Patrick sold as a slave, comes back to Ireland as a missionary. Columba and Iona, Aidan and Lindisfarne, Augustine and Canterbury. The legend that Augustine met the Celtic Bishops on College Green. Synod of Whitby. Theodore of Tarsus and Alfred the Great.
 5. Europe with the Church as its centre. The Church educates the people of Europe through the schools of the monasteries. S. Francis and his followers. Local monasteries. The decay of religion leads to the movements for reform; John Wycliffe and the Lollards; Martin Luther and the Diet of Worms.
 6. Changes in the Church of England. Henry VIII quarrels with the Pope, dissolves the Monasteries, modifies the practices of the Church and issues the English Bible. More reforms under Edward VI, reversed by Mary. Tyndale and Latimer. Elizabeth combines the old and the new.

Section D. Practical Christianity

Candidates will attempt questions on Part I (Sections 1-7) or Part II (sections 8-13). *In this paper candidates may have the use of the Bible when preparing their answers.*

PART I PROBLEMS OF PERSONAL RELATIONSHIPS

1. *Authority—Parents—Family Life and School Life**Bible References*

- (a) Christians do not live Separately Romans 12 vv. 3-5 ; 14 vv. 7-8.
- (b) The example of the Good Shepherd John 10 vv. 11, 18.
- (c) Belonging to each other 1 Corinthians 12 vv. 13-27.
- (d) God is in charge Psalm 100.
- (e) God is in charge—for good Mark 1 vv. 21-28.
- (f) God is in charge everywhere Romans 8 vv. 31-39.
- (g) You matter to God—and so does everyone else Luke 15 vv. 1-10.
- (h) Jesus refused to be a Popular king John 6 vv. 14-15.

Topics would cover questions on freedom and responsibility within the home and school circles.

2. *Friendship—Loyalty**Bible References*

- (a) Loyalty—being ready to make sacrifices Luke 14 vv. 27-33.
- (b) Jesus was loyal to His friends John 15 vv. 12-14.
- (c) We owe an absolute loyalty to God Mark 12 vv. 30-31.
- (d) People are more important than things Mark 3 vv. 1-6.
- (e) The Sabbath was made for man Mark 2 vv. 23-28.
- (f) Religious duties do not excuse us from our duties to others Matthew 23 vv. 23-24.
- (g) Quarrelling about "Rights" Luke 22 vv. 24-29.
- (h) Be ready to climb down Matthew 5 vv. 23-24.
- (i) The dangers of greed Luke 12 vv. 13-15.

Topics on the implications of friendship—loyalty, forgiveness, altruism, etc.

3. *Sex and Marriage**Bible References*

- (a) The strange woman Proverbs 7 vv. 6-23.
- (b) The marriage at Cana John 2 vv. 1-10.
- (c) More about evil women Proverbs 6 vv. 20, 24-29.
- (d) Advice from St. Paul on right living Ephesians 6 vv. 10-17. Philippians 4 vv. 6-8. Ephesians 5 vv. 1-12. 1 Corinthians 6 vv. 18-20.

Topics on boy and girl relationships.

4. *Money**Bible References*

- (a) The Widow's Mite Mark 12 vv. 41-44.
- (b) The Prodigal Son Luke 15 vv. 11-34.
- (c) Getting money and its dangers Matthew 6 vv. 19-24. Mark 10 vv. 17-22. Luke 12 vv. 16-21.
- (d) The Good Samaritan Luke 10 vv. 30-37.
- (e) Using money Luke 12 vv. 32-34. Matthew 6 vv. 2-4. 2 Corinthians 9 vv. 6-15.

Topics on use of money and its value.

5. *Work—Vocation—Ambition—Aim in Life**Bible References*

- (a) No slacking Proverbs 6 vv. 6-11. Proverbs 26 vv. 14-16.
- (b) Work willingly Ephesians 6 vv. 5-8.
- (c) Jesus did God's work John 5 vv. 16-18.
- (d) Everybody ought to work 2 Thessalonians 3 vv. 7-13.
- (e) Everyone can help, each in his own way 1 Corinthians 12 vv. 12-25.

- (f) Let Christ be your example Philippians 2 vv. 3-9.
 - (g) We are to use the gifts we have Luke 19 vv. 12-27.
 - (h) The Gospel standard Matthew 23 vv. 11-12.
 - (i) Jesus had a purpose in life Mark 1 vv. 35-39.
 - (j) It is completed John 19 vv. 28-30.
 - (k) Jesus saw that to complete His work would mean His death Mark 10 vv. 32-34.
 - (l) Even Jesus found it hard to hold to his purpose Mark 14 vv. 32-36.
 - (m) Jesus gave a purpose to his disciples Mark 6 vv. 7-13.
 - (n) We are here for partnership with God Genesis 1 vv. 27-28.
 - (o) and with other people Luke 6 vv. 32-38.
- Topics on one's job, ambition, purpose in life.

6. Leisure

Bible References

- (a) The Sabbath Exodus 20 vv. 8-11.
- (b) The Sabbath at Capernaum Mark 1 vv. 21-31.
- (c) Another Sabbath Mark 2 vv. 23-28. Mark 3 vv. 1-5.
- (d) The Praise of God in his house Psalm 100 vv. 1-5.
- (e) Friday; the Sabbath; Sunday Luke 23 vv. 50-56. Luke 24 vv. 1-6.
- (f) Another Psalm of Praise Psalm 138 vv. 1-8.

Topics on Sunday observance, responsible choice, compulsion.

7. Prayer

Bible References

- (a) The Pattern Prayer Luke 11 vv. 1-4.
- (b) Solitary Prayer—A choice is taken Matthew 4 vv. 1-11.
- (c) The Prayer of Commitment and dependence Luke 22 vv. 39-46.
- (d) Prayers to Jesus for help Matthew 15 vv. 21-28. Mark 4 vv. 35-41. Luke 18 vv. 35-43.
- (e) Jesus teaches about prayer Matthew 6 vv. 5-15.
- (f) Asking Matthew 18 vv. 19, 20.
- (g) Thanking 1 Thessalonians 5 v. 18. Colossians 3 v. 17.
- (h) Confession 1 John 1 vv. 5-9. Psalm 51 vv. 1-3, 10.
- (i) Prayer for others Luke 8 vv. 41, 42, 49-56. Ephesians 3 vv. 14-16.
- (j) Praise Psalm 145 vv. 1-12. Psalm 148 vv. 1-14.

Topics on private and corporate prayer.

PROBLEMS OF SOCIETY

PART II PROBLEMS OF PERSONAL RESPONSIBILITY

8. Personal Conduct—Honesty—Choice—Responsibility

Bible References

- (a) The law of witness and false witness Deuteronomy 19 vv. 15-21.
- (b) Witnesses at Christ's trial Matthew 26 vv. 57-62.
- (c) Christian Behaviour Colossians 3 vv. 1-14.
- (d) We are to love our neighbour Mark 12 vv. 30-31.
- (e) We are to say what we mean and mean what we say Matthew 5 vv. 36-37.
- (f) Christian teaching about truth and honesty Romans 13 vv. 8-10.
- (g) Am I my Brother's keeper? Genesis 4 vv. 8-9.
- (h) Call to take responsibility Jeremiah 1 vv. 4-10.
- (i) Trying to escape responsibility Matthew 27 vv. 22-24.
- (j) Accepting responsibility Mark 10 vv. 32-35.
- (k) Our actions reveal our choice Matthew 25 vv. 31-46.
- (l) Paul's experience of choosing Romans 7 vv. 19-25.
- (m) We can't cure ourselves 2 Corinthians 5 vv. 17-19.
- (n) There's something wrong with all of us Romans 7 vv. 18-19.
- (o) The trouble is selfishness Luke 12 vv. 15-21.

Topics on knowledge, faith, behaviour.

PROBLEMS OF MEANING

9. *Suffering**Bible References*

- (a) Relieving the suffering of others Luke 10 vv. 30-37.
- (b) Meeting suffering with love Mark 15 vv. 15-39.
- (c) The Fellowship of Suffering Philippians 3 v. 10. 1 Peter 4 vv. 12-13.
- (d) Suffering is evil, but not unmitigated evil Mark 7 v. 37. Revelation 7 vv. 9-17. Romans 8 v. 28.
- (e) Job's two trials Job 1 vv. 8-22. Job 2 vv. 3-10.
- (f) Some questions to Job Job 38 vv. 1-7, 16-18, 22, 25-27, 39-41. Job 39 vv. 13-20, 26-27.
- (g) The Epilogue Job 42 vv. 10-17.
- (h) The Parable of the Pounds Luke 19 vv. 11-27.
- (i) The parable of the Talents Matthew 25 vv. 14-30.
- (j) The parable of the Labourers Matthew 20 vv. 1-16.

Topics on the great problem of the relationship between suffering and belief in God.

10. *Death—Judgment—Hell**Bible References*

- (a) Life does not "go on" in the same way after death Matthew 22 vv. 23-33.
- (b) Eternal Life John 17 v. 3.
- (c) The rich man and Lazarus Luke 16 vv. 19-31.
- (d) The sheep and the goats Matthew 25 vv. 31-46.
- (e) The return of the Lord Luke 12 vv. 35-38.
- (f) The bridegroom comes Matthew 25 vv. 1-13.
- (g) Whether in life or death . . . 1 Thessalonians 5 vv. 9-11. Romans 14 vv. 7-9.
- (h) A sure promise John 14 vv. 1-6.
- (i) The present, and the end 1 Thessalonians 4 vv. 11-18.
- (j) In or out of the body 2 Corinthians 5 vv. 6-10.
- (k) Jesus cared for "bad" people Luke 5 vv. 27-32.
- (l) What the Bible says about hell Psalm 16 v. 10. Acts 2 v. 27. Matthew 5 v. 22. Matthew 16 v. 18.
- (m) What Jesus said about the future Luke 13 v. 29; 12 vv. 31-32; 11 v. 2.
- (n) God seeks rather than punishes Luke 15 vv. 1-7.

Topics on life after death.

11. *The Colour Bar—Racial Prejudice—Snobbery—Class Distinctions**Bible References*

- (a) Riches are in the way Mark 10 vv. 21-22.
- (b) Who is the greatest? Mark 10 vv. 35-38, 41-45.
- (c) The Master is the Servant John 13 vv. 1-7, 12-14.
- (d) Blessed are the meek Matthew 5 v. 5. Psalm 37 v. 11.
- (e) You are all one in Christ Jesus Galatians 3 v. 28.
- (f) Jesus always helped people in need Mark 10 vv. 46-52.
- (g) Jesus shows the truth Mark 3 vv. 22-27.
- (h) You cannot be neutral about good and evil Luke 11 v. 23.
- (i) Pilate tried to be neutral John 18 vv. 37-40.
- (j) His neighbour's trouble became his concern Luke 10 vv. 33-36.
- (k) How far God's love will go Luke 23 vv. 33-35.
- (l) We love because He first loved us 1 John 4 v. 19.

Topics on colour and class problems, caring for others.

12. *Pacifism*

Topics on the Bomb and the Christian conscience.

13. *Going to Church*

Bible References

- (a) Assembling ourselves Together Hebrews 10 vv. 23-25.
 - (b) Prayer together Matthew 18 vv. 19, 20.
 - (c) Jesus' custom Luke 4 v. 16.
 - (d) Dwelling places of God Isaiah 57 v. 15.
 - (e) The First Christians Acts 2 v. 44 ; 12 v. 12 ; 16 vv. 5, 40.
- Topics* on going to Church.

PROJECT OR COURSE WORK

A. *Project*

A list of suggested subjects is given hereunder but alternative subjects may be submitted from any part of FIVE years' work provided they have been approved 12 months before the examination.

A Man there Lived in Galilee. (Our Lord's Life).

The Passion.

Simon Peter.

Healing—old and new.

Famous Doctors (Lister ; Ross ; Pasteur and Schweitzer).

Famous Nurses (F. Nightingale ; Mary Reed ; Mrs. Starr and Mary Bird).

Servants of God.

The Reformation.

Four Saints. (Benedict ; Francis ; Joan of Arc ; Bernard of Clairvaux).

Idolatry (Elijah and Baal worship, etc.).

Palestine in Christ's time.

Modern Palestine.

An Indian Boy or Girl, etc. (a study of other religions).

Troublers of Israel (a study of the Prophets).

The Miracles of Jesus.

Alcoholics.

The Story of the Bible.

Christian Sportsmen (C. T. Studd ; D. Sheppard).

Christianity criticised.

Soho Patrol (Salvation Army Rescue Service).

Unity (a study of South India, World Council of Churches, etc.).

Correct Race Relations (a study of the colour problem).

My Faith. Questions and Answers.

How to Study an old Church.

St. Luke.

Outlook (a Christian magazine).

The Fight for Religious Freedom.

Symbols in Faith.

Train up a Child (teaching religious ideas to children).

Prisoners of War (Babylonian exile).

The Rulers take counsel (the parts played by individuals and factions in the Passion).

A Teenage Church.

A Study of Village Churches.

A Study of Monasteries.

A Study of Cathedrals.

Orphans and Slaves (Barnardo and Wilberforce).

The Art of Living.

How to be a Successful Teenager.

Vital Issues for the Christian.

Modern Discovery and the Bible.

Facing Life—a study of the problems of work, leisure, friendship, engagement, marriage, homemaking, etc.

To Take up—or Lay down—a study of Pacifism and non-Pacifism.

B. Course Work

The candidate will keep special notebooks on the work done for Papers I and II during the 2 years' course. The notebooks must contain much original work and be submitted for examination when demanded.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 13

Rural Studies
Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

RURAL STUDIES (North)

- (a) Paper I 2 hours duration 33%. (b) Paper II 2 hours duration 33%.
(c) Practical work 34%.

PAPER I

Paper I will consist of a large number of questions requiring short answers, covering the whole field of Rural Studies.

1. Soil Studies

Origins: weathering, to include action of glaciers, frost, sun, rivers, seas, acids (from plants and air), oxidation, wind.

Composition: inorganic—mineral matter, sand, clay, chalk; organic—humus (bacteria), effects on soil texture.

Classification: heavy soils, light soils.

Single soil profiles: top soil, subsoil, rocks; simple mechanical analysis.

Soil air, its function and effect on growth.

Soil moisture: water table.

Methods of drainage: double digging, trenching, tiles, mole.

Digging: simple, double, trenching, ridging.

Cultivating: hoeing, raking, mulching, rolling, forking and comparable farming operations.

Soil fertility: maintenance through use of organic manures, chemical fertilisers, crop rotation.

Chief plant foods: nitrates, phosphates, potash, calcium; chemical and organic sources; trace elements; effect of each on plant growth.

Action of lime in soils: flocculation of clay, reduction of acidity, release of plant foods.

Fixation of atmospheric nitrogen; legumes.

Soil bacteria and their importance.

Humus as a basis of fertility.

The garden compost heap.

Soil acidity and alkalinity: B.D.H. Test, pH values and use of pH tests in their correction.

Plant indicators.

Soil temperature: colour, organic content, water, aspect.

Radiation: water evaporation.

Soil conditioners: lime, gypsum.

Garden tools and their upkeep.

Seed and potting composts.

Soil sterilization.

Mechanical aids: rotovators, grass-cutting machinery and sprayers.

2. Plant Studies

Structure and life history of monocotyledon and dicotyledon plants, including a simple study of germination, growth, photosynthesis, food storage, transpiration, pollination, fertilisation, dispersal of fruits and seeds, hormones and growth factors and methods of propagation. Common pests and diseases of garden crops and their control, viz.:

Rose mildew. Brown rot. Cabbage white butterfly. Cabbage root fly. Botrytis. Die back. Club root. Potato blight. Potato and tomato virus. Aphids. March moth. Apple blossom weevil. Flea beetle.

3. Animal Studies

External features of a named mammal, bird and insect.

The digestive, circulatory, excretory and reproductive systems of mammal.

Bone structure: skeleton of a named mammal or bird.

General principles of livestock feeding, carbohydrates, fats, proteins, mineral salts, vitamins.

Animal hygiene and disease control.

PAPER II

This paper will be divided into six sections, candidates being required to answer questions from any two of these sections. The questions will be fewer and will require more detailed answers than those in Paper I.

(A) *Associated Science*

Soil and weather study. The syllabus for this paper will be similar to that for Paper I, but with additions, and a more advanced knowledge will be expected.

(B) *Agriculture*

1. The history of agriculture.
2. Cropping systems and rotations: manures and fertilisers.
3. Crop husbandry and farm weeds.
4. Agricultural grasses.
5. Farm machinery.

Candidates taking this section will be expected to answer questions on two sub-sections.

(C) *Horticulture*

1. Vegetable garden.
2. Fruit garden.
3. Flower garden.
4. Use of grass.

Candidates taking this section will be expected to answer questions on two sub-sections.

(D) *Animal Husbandry*

(E) *Field Work and Ecological Studies*

(F) *Forestry*

Section A. Associated Science

The syllabus for this section will be as for Paper I, but with the following additions:

Atmospheric pressure. The composition of air; combustion and respiration. Transference of heat by conduction, convection and radiation. Temperature measurement. Atmospheric conditions, humidity, dew, cloud, mist, fog, frost.

Types of rock and erosion as an introduction to the formation of soils. Simple study of physical and chemical characteristics of soils. Advantages gained by making use of weather in soil improvements. Use of lime. Nitrification and humus, manures and fertilizers.

Structure and life history of monocotyledon and dicotyledon plants, including a study of germination, growth, photosynthesis, food storage, transpiration, pollination, fertilisation and dispersal of fruits and seeds. Hybridisation, mendalish and growth substances.

The characteristics of living things, plants and animals compared, cell structures.

Section B. Agriculture

Candidates taking this section will be expected to answer questions on two sub-sections.

1. *The History of Agriculture*

Development of agriculture from Biblical times.

Anglo-Saxon 3-field system.

Manorial system.

Tenant farmers and the enclosure of land.

Drainage of the Fens during the 17th century.

Agricultural Revolution: personalities such as Townsend, Coke, Bakewell, Tull, Collins Bros., Young.

Enclosure Acts and Corn Laws.

Cobbetts Rural Rides.

High farming of the mid-19th century followed by the depression at the end.

Effects of the World Wars during the 20th century.

The setting up of the various Marketing Boards.

Annual Agricultural Price Reviews. Structure, usefulness and effect.

Agricultural mechanical revolution, e.g., Tull, Steam, McCormick, internal combustion engine, cold storage and refrigeration.

2. *Cropping Systems and Rotations: Manures and fertilizers*

Cropping systems to be taken into consideration rather than formal crop rotations, especially local cropping systems.

Formal rotations including the Norfolk 4-course system taking into account the following:

- (a) circumstances of the farm;
- (b) maintenance of fertility, catch cropping;
- (c) economical distribution of labour;
- (d) sequence of crops;
- (e) control of weeds;
- (f) control of plant diseases.

Balance of fertility by using manures and fertilizers.

The effects of the main elements on plant growth shown by cultural experiments.

Green manuring, farmyard manure, compost, liquid manures, organic farming.

Nitrogen, phosphorus and potassium; the common chemicals found in each group dealt with in an elementary manner.

Compound fertilizers.

The purchase of fertilizers.

3. *Crop Husbandry and Farm Weeds*

Recognition, cultivation and harvesting and use of cereals, pulse crops, roots, potatoes, sugar beet, agricultural seed crops, brassicas, conservation and storage.

Common pests and diseases of farm crops, e.g., rusts of cereals, eyespot of wheat and barley, powdery mildew in cereals, potato viruses, potato blight (including Beaumont period), virus yellows of sugar beet and mangolds, root eelworm of sugar beet and potatoes.

Common weeds of arable land, their recognition and control including the use of modern crop sprays and spraying apparatus.

The effect of chemical sprays on plant and animal life.

4. *Agricultural Grasses*

Recognition from vegetative and flowering condition:

Italian ryegrass. Perennial ryegrass. Cocksfoot. Timothy. Meadow fescue. Late flowering red clover. Wild white clover. White clover. Broad red clover. Alsike clover. Lucerne. Sainfoin.

Modern seed mixtures for temporary and permanent leys and permanent pastures.

Use of grass through grazing, hay, silage, dried grass and zero grazing, for pigs, poultry, and cattle.

Feeding, management and weed control.

Pig leys.

Herb strips.

5. *Farm Machinery*

Farm safety.

The agricultural tractor wheeled and tracked.

The principles of petrol, T.V.O. and diesel engines. Lubrication and maintenance.

Differences between petrol, diesel and T.V.O. engines.

Value of hydraulic system and power take off.

Recognition and uses of common farm implements: plough, harrow, rolls, rotary cultivators, potato diggers, beet harvesters, combine harvester, forage harvester, seed drill, combine drill, manure distributors, pick up baler, crop lifters.

Section C. Horticulture

Candidates taking this section will be expected to answer questions on two sub-sections.

1. *The Vegetable Garden*

The use and care of tools. Cultivation of roots and tubers, brassica, leguminous crops, salads, less common vegetables.

Winter digging and manuring, preparation of seed beds, rotation of crops, successional cropping, intercropping, composting, treatment for weeds, pests and diseases, beneficial animals.

Use of cold frames, garden lights and cloches.

Variety trials and simple, short-term, experimental work.

2. *The Fruit Garden*

Soft fruits. Black and red currants, gooseberries, strawberries. Development of a bush from a cutting to a mature fruiting stage, choice of site. Propagation, pruning, spacing and planting. Certified stock. Pests and diseases and their control. Mulching.

Tree fruits. Apples, pears and plums. Development of root stocks and their effects on the mature tree.

Stooling and layering of root stocks, budding and grafting. Pruning for shape and framework, subsequent pruning for fruit. Pests and diseases and their control. Fertility rules in fruit planting. Choice of site. Manuring.

3. *The Flower Garden*

Culture of the more common garden flowers and decorative shrubs, hedges, the use of annuals and biennials in bedding schemes, the growth and propagation of perennials, making a herbaceous border.

Rose culture, pruning and budding.

Lawn making and maintenance.

Rock garden, structure and maintenance.

The use of frames, lights and heated greenhouses in raising plants for indoor and outdoor use.

The growing of some specialist crop or crops.

Pests and diseases and their control.

4. *The Use of Glass*

1. Types of greenhouses.

2. Aspects.

3. Methods of heating, ventilation, humidity, water and shading.

4. Hygiene in the greenhouse, pots, seed boxes, stakes.

5. Control of pests and diseases.

6. Composts.

7. Crops :

- (a) Raising bedding plants, using various methods of propagation ; seed sowing ; potting on.
- (b) Vegetable crops. Tomatoes, cucumbers and lettuce.
- (c) Annuals for pots.
- (d) Foliage and decorative plants.
- (e) Sub-tropical plants.
- (f) Bulbs for forcing.
- (g) Seasonal plants, their staging for display.
- (h) Hybridisation.

Section D. Animal Husbandry

External features of mammal, bird and insect.

The digestive, circulatory, excretory and reproductive systems of mammal. Bone structure. Skeleton of a named mammal or bird.

General principles of livestock feeding, carbohydrates, fats, proteins, mineral salts, vitamins, maintenance and production rations, all treated simply.

A careful study of the following : domestic fowl, ducks, geese, rabbits, pigs, sheep, goats, cattle, bees.

Common pests and diseases of the chosen animals, and the control of these pests and diseases. Common breeds and their uses. Breeding, rearing, housing systems and management for healthy stock and production of eggs, meat, milk (including clean milk production and milk grades), fur, wool, honey and wax.

For poultry—the structure of the egg, sex linked systems, digestive and reproductive systems of the bird. Production of eggs.

For the bee—Production of honey and wax. Outline of bee biology, including relation to pollination, communal organisation.

For cattle and goats—Economic importance of Dairy, Beef and dual purpose breeds.

For rabbits—Breeds for fur, wool or meat.

For pigs—Breeds for pork, bacon, and dual purpose.

For sheep—Breeds for production of wool and meat.

Section E. Field Work and Ecological Studies

Simple plant and animal ecology, plant associations, dominant plants, animal territory, migration.

Observations and study, including life history of wild animal life, a mammal, a bird, a reptile or a crustacean, insects, animals of pond or pool.

Observation and study of wild plants including recognition of common trees. Simple classification, habitat and growth.

Section F. Forestry

1. Names and recognition of the more common types of trees : ash, beech, birch, horse chestnut, elm, oak, poplar, willow, cedar, cypress, fir, pine, larch, sycamore.
2. Natural and man-made forests. Economic importance of trees. Danger of deforestation.
3. Nature of woody stems and thickening. Growing points and effects of damage (including agents causing this).
4. Animals of importance in woodlands. Rabbits, hares, red and grey squirrels, deer, moles, mice and voles. Beneficial and harmful birds.
5. Growing trees from seed and vegetative means. Formation of seed beds, collection of seeds and extraction. Germination, planting and establishment.
6. General forestry management. Timber measurement. Elementary forest surveying. Fire prevention.
7. Insect pests and diseases of woodlands.
8. The formation, organisation and work of the Forestry Commission.

PRACTICAL WORK

The practical work will be assessed by the teacher concerned during the candidate's fourth and/or fifth year.

The minimum requirement for practical work is that it should cover the two sections of Part II of the written paper answered by the candidate, with 33 $\frac{1}{3}$ % of the total practical mark for each section.

A log book must be kept of all practical work done. This book may be required, and a candidate may be interviewed by the moderator before the marks for practical work can be finalised.

Individual Study

The Individual Study will carry 33 $\frac{1}{3}$ % of the Practical Mark. Candidates must make an individual study of any type of practical work, either connected with the syllabus or to do with any rural craft or occupation (e.g., carnation growing, cheese making, hedging and ditching, thatching, pig keeping). This will also be assessed by the teacher, but a brief written or oral account and evidence of the practical work done may be required for the moderator.

For practical examinations the following pattern will be followed in all sections :

1. A knowledge of tools, including mechanical tools associated with the sections taken, and their correct usage.
2. Treatment of crops grown or animals kept, with due regard to good husbandry.
3. Identification of materials related to the subject, studied within the area of the school, including identification and treatment of pests and diseases.
4. Attitude of entrant toward the practical aspect of the subject.

Suggestions for Practical Work in Agriculture

ANIMAL HUSBANDRY

Weighing out and feeding rations to a sow and litter.

Weighing out and feeding rations to a pen of stores.

Holding a piglet for castration or inoculation.

Disposal of faeces.

Weighing out and feeding rations to a laying flock.

Weighing out and feeding rations to growers.

Daily management of an incubator.

Daily management of a chick brooder.

Daily management of a deep litter house or other intensive system.

Daily management of small livestock, i.e., rabbits, chinchillas and hamsters.

Handling poultry for caponization or inoculation.

CROP HUSBANDRY

Each candidate should have participated in the cultivation and preparation of land for the particular crops grown and will be asked to demonstrate an operation relevant to the season in which examined.

FARM MACHINERY

Daily servicing of a tractor.

Starting and driving a tractor.

Hitching plough or other implement to three-point linkage.

Setting and working a plough.

Reversing a two-wheeled trailer.

Demonstrating a particular stage on the top overhaul of a small internal combustion engine.

Simple fault finding on an engine.

Suggestions for Oral Examination

ANIMAL HUSBANDRY

Accurate naming breeds of animals kept on the Unit.

Discussing the following :

Consumption of food, housing, flooring, bedding, ventilation, lighting, insulation, measures against disease, internal and external parasites, operation of the incubator, gestation periods.

CROP HUSBANDRY

General objects of tillage. Use of implements in preparation of a good tilth and in the control of weeds. Value of rotation for crops. Methods of weed control. Identification of pests and diseases and control. Recognition of various crops. Use and application of farmyard manure and chemical fertilizers. Harvesting and storage of crops.

FARM MACHINERY

Operation of the internal combustion engine. Discussion of lubrication, fuels, cooling systems, and position of external component parts. Use of gears in the transmission. Parts of the plough and their uses. Working details of manure distributors, combine harvesters, pick-up balers, and sugar beet harvesters either on neighbouring farms or through visual aids.

Suggested Practical Work in Horticulture

- (a) A small vegetable plot cultivated and sown with a range of common vegetables. A record kept of sowing dates, methods of cultivation, pests noted and dealt with.
- (b) A border or plot of annual flowers grown for cutting. Records kept of sowing times, thinning, and other methods of cultivation, cutting, pests.
- (c) A plot of salad crops to include lettuce, radish, spring onion, showing a succession of crops throughout the season. This project could be carried out under glass or frame.
- (d) Care of a fruit plot, to include the propagation of apple, blackcurrant, gooseberry, raspberry and strawberry. The cultivating, pruning, harvesting and packing of the fruit, the prevention of pests and diseases.
- (e) The propagation and greenhouse care of not less than four different house pot plants suitable for decoration work. These should have been propagated and reared to maturity with a record of all cultivation.
- (f) A study of methods of propagation. These must include those requiring special treatment in a propagating frame. Methods must include budding and grafting soft and hardwood cuttings, leaf cuttings, layering, seed sowing, the use of root hormone powders, mist propagation. The keeping of records is essential in this project.
- (g) Keeping a hive of bees for at least twelve months. Manipulation of the brood box, supering, swarm control, honey collection and extraction together with records of operations carried out.

Suggested Practical Work in Rural Crafts

- | | |
|-----------------------------------|-----------------------------|
| 1. Food preservation. | 9. Ditching. |
| 2. Butter and cheese making. | 10. Chestnut paling. |
| 3. Canning. | 11. Rake and broom making. |
| 4. Bottling and deep freeze. | 12. Basket and trug making. |
| 5. Poultry plucking and trussing. | 13. Skinning and tanning. |
| 6. Hurdle making. | 14. Leatherwork. |
| 7. Hedge laying. | 15. Wrought iron work. |
| 8. Thatching. | |

RURAL STUDIES (South)

- (a) Paper I 1½ hours duration 25%. (b) Paper II 1½ hours duration 25%.
(c) Practical work 40%. (d) Course work 10%.

The examination is devised to test a candidate's ability in practical and theoretical work over a period of time in Rural Studies. The examination consists of two main sections: the compulsory section, which is termed the Principles of Rural Studies, and a section of optional studies of which schools can select two topics for detailed study. Practical work will be examined in both the compulsory and optional studies.

Method of Examination

THEORY PAPERS

Paper I. Principles of Rural Studies. Section A. 40 questions, short answers. Section B. Longer questions, choice 2 out of 5.

Paper II. Optional Studies. Six questions will be set on each option. Five questions to be answered, at least two questions being taken from each section of the two optional topics studied.

PRACTICAL

Each school will submit a list of twelve proposed practical tasks from the Board's list to the Secretary, by October 1st of the year preceding the examination. The Examiner will select six of the above twelve practical tasks which the teacher will assess, any of which may be moderated throughout the year.

One-third of the practical tasks must be selected from Section A, Principles of Rural Studies, and one-third from each of the two optional studies.

Consultation between moderator and school regarding the moderation of these practical tasks should take place so that they are completed by the date specified.

COURSE WORK

An individual record of work and/or an individual record of optional studies should be available for assessment by the moderator.

PAPER I. PRINCIPLES OF RURAL STUDIES

1. Soils and Climate

- (a) Rocks : Formation of soils. Sedentary and transported soils. Biological, chemical and physical forms of weathering.
- (b) Structure and nature of soils : Rock particles, coarse and fine sand, silt, clay, soil types. Simple soil analysis. Topsoil and sub-soil, strata and profile. Texture, pore space. Water table. Waterlogging and drainage. Temperature, humus and erosion.
- (c) Life in the Soil : Slugs, wireworms, nematodes. Life cycle and benefits of the earthworm. Bacteria and fungi.
- (d) Soil Cultivation : Structure and use of garden tools. Maintenance of tools. Methods of cultivation and allied processes. Digging, composting, liming. pH values. Antacid/Alkaline treatments. The uses and abuses of modern methods of cultivation.
- (e) Soil-less cultivation : Hydroponics, Ring culture.
- (f) Plants and Soil : Plants and soil types (calcareous plants, etc.). Plant foods : N.P.K. Organic and inorganic fertilizers. Depth of sowing. Indoor and outdoor seed sowing. Symbiosis, nitrogen and carbon cycles.
- (g) Crop Rotation and soil preservation : From three-field system to modern methods and application of rotation.
- (h) Weed Control : Nature and type of weeds. Physical, chemical and mechanical methods of weed control.
- (i) Climate : Simple study relating climatic conditions to seasonal work, plant growth and cropping programmes with especial reference to garden crops.

2. Plant Structure and Function

The Root

- (a) Holding the plant in the soil.
- (b) Absorbing inorganic salts in solution from the soil.
- (c) Conveying these salts in solution to the stem for passage to the leaves.

Tap roots, tuberous roots and fibrous roots.

The Stem

- (a) Carrying the inorganic salts in solution from the roots to the leaves.
- (b) Carrying the manufactured organic food from the leaves to all parts of the plant.
- (c) Bearing the leaves suitably for photosynthesis.
- (d) Displaying the flower for pollination.
- (e) Expose the fruit for dispersal of seeds.

The Leaf

- (a) Respiration.
- (b) Transpiration.
- (c) Photosynthesis.

The Flower

The parts of the flower and their functions, in a few common plants. Modifications of leaves and stems—climbing plants. Pollination by wind and insects. Fertilisation, fruit and seed formation.

Fruit and Seed

Fruit and seed dispersal, examples of wind, animal (external and internal) and self-dispersed seeds. The structure and germination of seeds, examples from dicotyledons and monocotyledons. Conditions necessary for germination. Further conditions needed for the healthy growth of seedlings into mature plants.

Factors which influence the growth of a plant

Irritability and response to stimuli;
Tropisms, geotropism, hydrotropism, phototropism.

Food storage in plants

Annuals, biennials, herbaceous and woody perennials.

Types of storage organs.

Stems (a) Rhizomes; (b) Corms; (c) Tubers.

Leaves. Bulbs. Roots. Tap Root.

Seeds and fruits. Plants as a source of food.

Methods of plant propagation

By seeds and vegetative processes, natural and artificial methods.

3. Animal Structure and Function

(a) *The animal* as a self-maintaining, self-reproducing system; holozoic nutrition, interdependence with plants, adjustment and adaption to environment.

(b) *Range of animal form.*

(i) *Insects.* Insect body form. Life history and mode of nutrition of any named insect, and its significance in agriculture or horticulture.

(ii) *Birds.* Characteristics of the class. Reproduction; formation and structure of the egg; incubation. Modifications of the digestive tract (including jaws) to suit mode of nutrition. Modifications of respiration, skeletal and muscular systems, and feathers, for flight.

(iii) *Mammals.* Characteristics of the class. Study adaptations to environment—all the studies related to any named mammal. Parturition. Care of the young.

- (iv) *Metabolism* and associated systems. Energy requirements; growth requirements.

Alimentary canal—ingestion, digestion, absorption, defaecation. Food types and values. Consider (1) either a ruminant or an animal which performs refection, and (2) an omnivore or carnivore. Transport. Blood and lymphatic systems.

Respiration. Tissue respiration and breathing mechanisms.

Elimination. Excretion of nitrogen waste.

Behaviour and controlling systems.

<i>Behaviour</i>	<i>Related mechanisms</i>
Food seeking	Muscles
Mate seeking	Skeleton
Avoidance of danger	Sense organs
	Co-ordination systems

Reproduction and life cycle.

Self-maintaining system: Repair. Defence against invasion. Growth.

Self-reproducing system: Courtship. Mating. Internal fertilisation. Development of embryo.

PAPER II. OPTIONAL STUDIES

Section A. Fruit

TOP FRUITS

1. *Methods of propagation*

- Study of the structure of roots and stems to show that each rootstock and scion variety has its own distinctive feature (i.e., dwarfing, vigorous, etc.).
- An elementary study of compatibility and structure of the cambium layer.
- A knowledge of Malling and Merton Malling stocks.
- Methods of forming stool beds, layer beds, and by hard wood cuttings.

2. *The Mechanism of grafting*

- Use of stock and scion in the propagation of fruit trees.
- The practical ability to raise a fruit tree by all known methods, including renewal methods of grafting.
- The practical ability and skill in the use of grafting tools and to demonstrate (by bench grafting if necessary) the correct procedure in the task, i.e., correct length of scion, the type of cut and union, tying and waxing. Knowledge of immediate after care.
- Recognition of types, e.g., espaliers, cordons, bush, half standard, fan-shaped and wall-trained trees, etc.
- Planning a fruit plot—Based on R.H.S. or Kent demonstration plots.

3. *Pruning*

The practical and theoretical ability of pruning methods:

- The training of the maiden tree to the desired shape and type.
- Recognition of leaf, and fruit, buds and fruiting spur.
- Summer and winter pruning.
- Other methods of controlled growth, e.g., training, notching and bending.

4. *In General*

- (a) To plant, stake and tie a tree in the correct manner.
- (b) Spraying programme (routine sprays).
- (c) Pest and disease control (an elementary knowledge of scab, mildew, saw fly, red spider).
- (d) Manurial requirements to include deficiencies.
- (e) Identification of at least the varieties grown in the school garden and at home.
- (f) Harvesting and storage (times for picking according to varieties).

SOFT FRUITS

Raising of Soft Fruits

Select *one* of the following : Black currants, Red currants, Gooseberries, Raspberries, Strawberries.

- (a) By cuttings and earthing up.
- (b) Layering and runners.
- (c) Methods of planting, tying up, pruning and after care.
- (d) Manurial requirements.
- (e) Control of well-known pests and diseases.
- (f) Varieties and time of harvesting.

Section B. Vegetable Gardening

General

Planning of vegetable garden, R.H.S. vegetable garden displayed. Limiting factors of weather and maturation. Obtaining of seeds and plants, varieties for locality, quality, succession, quantities required. Recognition of seeds and plants. Dates of operations. Rotations, intercropping, successional cropping, catch cropping. Techniques and principles of cultivation. Soil preparation and seed bed, sowing and planting, depth of sowing and planting, distances between plants and rows, thinning, transplanting, staking, earthing up, harvesting, storing, seed saving. Use of vegetables—Method of serving, e.g., Fresh, cooked, dry, preserved, frozen.

Harmful animals and plants. Recognition of organism, life history and control as follows :

Mammal. Rabbit, mice.

Bird. Pigeons, Rooks.

Insects. Wireworm (Click Beetle). Cabbage White Butterfly. Flea Beetle. Bean Aphis.

Nematodes. Potato Eelworm.

Fungi. Potato Blight. Club Root.

Viruses. Potato Viruses and Certified Seed.

A detailed knowledge of one crop from each of the following groups is expected.

1. Brassicas—Brussels Sprout, Cabbage, Broccoli.
2. Roots—Potato, Carrot, Parsnip, Beetroot.
3. Legumes—Peas, Beans.
4. Stem and shoot crops—Celery, Leeks, Onions.
5. Miscellaneous—Tomato, Lettuce, Sweet Corn, Marrows, Cucumbers.

Section C. *Controlled Environment*

1. *Glasshouse*

- (a) Type—lean-to, span.
- (b) Materials for construction, wood, metal, bricks.
- (c) Heating—electric, oil, hot water systems, thermostatic control.
- (d) Ventilation.
- (e) Internal fittings—benches, water tanks, propagating frame, maximum and minimum thermometers. Mist propagation.

2. *Cold Frame and/or Cloches*

- (a) Type—cold frame—Dutch light, English light.
- (b) Cloches—barn and tent.

3. *Cultural Methods*

- (a) Composts—John Innes Composts. Types, materials and use.
- (b) Seed sowing.
- (c) Pricking out.
- (d) Potting.
- (e) Vegetative propagation—stem, leaf, root cuttings and layering.

4. *Management*

- (a) Conditions for plant growth—watering, ventilation and feeding, shading.
- (b) Care of cuttings and seedling.

5. *Cold Frame and/or Cloches*

Technique and management of *one* of these crops.

- (a) Early lettuce.
- (b) Frame cucumbers.
- (c) Melons.
- (d) Carrots.

6. *Glasshouse*

Technique and management of one of the following crops from each group.

- (a) tomato, cucumber, melons, lettuce ;
- (b) geranium, fuschia, pot plant raised from seed, chrysanthemum, cacti and succulents, bulbs and corms.

7. *Recognition* of one common pest, and one disease, and damage caused, selected from list. Meaning of soil sterilisation, fumigant, insecticide, and fungicide.

- (a) *Pests* : wireworm, aphid, white fly, red spider, leaf miner.
- (b) *Diseases* : grey mould, botrytis, damping off in seedlings, leaf mould (tomato).

Section D. *Decorative Horticulture*

(a) *Annuals*—Hardy, at least 6 should be known. Method and principles of producing an annual border.

Half-hardy, at least 6 should be known, methods of production and planting out. Bedding schemes.

(b) *Biennials*—3 biennials should be known and their sowing, planting, and flowering dates.

(c) *Perennials*—Planning and care of herbaceous borders. Methods of propagation of material—2 plants raised by different methods.

(d) *Flowering Shrubs*—Examples of 3 Spring and Summer flowering shrubs, 3 berried shrubs ; methods of propagation—hardwood, semi-hard (summer) cuttings, layering with samples. Pruning shrubs.

(e) *Bulbs and Corms*—Examples of bulbs and corms for outdoor decoration.

- (f) *Roses*—Types—hybrid tea, floribunda, climbing, rambler roses. Planting, pruning, pests and diseases. Propagation by budding.
- (g) *One specialist culture* of sweet peas, dahlias, chrysanthemums. Raising plants, planting out, special cultural treatments, pest and disease, storage if applicable.
- (h) Examples of two flowering trees, and one berried tree.

Section E. Animal Husbandry

A study of *two* of the following sections.

1. RABBITS

Breeds—Fancy, Fur and Table Breeds. Selection of breeding stock.
Breeding and Rearing—Mating, Gestation period, Preparation for birth, Care of doe and litter, Recording.
Housing—Types of hutches, stock, breeding, morant and colony.
Feeding—Prepared foods and natural foods, suitable and harmful wild plants.
Table Rabbits—Killing, skinning, preparation for table, Recording.
Fur Rabbits—Moult, correct time for Pelting, home curing pelts.

2. POULTRY

Method of keeping—Types of housing and equipment.
Breeds.
Breeding—Broody hens, incubator, brooding, infra red heaters, sex linkage.
Feeding—Digestive system—water, foods, rations, grit.
Egg Production—Grading, weighing.
Table Birds—Killing, plucking and trussing.
Care of Birds—*Culling*—Common ailments.
Points of Bird—Showing.

3. PIGS

Breeds—Pork, Bacon and crosses.
Breeding—Selection of stock. Service and gestation. Care of breeding stock. Farrowing. Castration and weaning.
Feeding—Food conversion, feeding costs, methods of feeding.
Housing—Types, insulation, ventilation and drainage. Grading and marketing.

4. GOATS

Method of keeping.
Housing—Construction and layout of a goat house.
Choosing a goat—*breeds of goats*—*points of a goat*.
Feeding—content of foodstuff.
The digestive system of a goat.
The breeding of goats—the reproductive system—mating—kidding—rearing.
Milking—composition of milk—milking practice—dairy work—butter and cheese making—dairy layout. Use of milk—the mammary glands.
Goat care—grooming, hoof trimming—illness—poisonous plants—disbudding the kid.
The costing of goat keeping.

5. Cows

Breeds—Milk, beef, dual purpose.

Breeding and Rearing—Mating, Artificial Insemination, Gestation, birth, care of young, weaning.

Feeding—Maintenance and production rations. Concentrates, bulk food, roughage and water.

Products—Milk, composition of milk, cream, butter, cheese. Routine operations in the dairy, hygiene.

Housing—Buildings for rearing, fattening and dairy.

Health and Disease—Recognition and control of tuberculosis, scours, mastitis and warble fly.

Section F. Ecological Study

1. METHODS

(a) *Sampling*—Surveying or otherwise analysing plant or animal communities. Candidate should have a knowledge of sampling techniques for all types of plant communities, e.g., quadrats, transects, large-scale maps. They should have a knowledge of methods of studying two animal groups, e.g., insects, birds, mammals or fish. These methods should include collecting and sampling techniques where applicable, or observational or rearing techniques where applicable. Careful records should be kept of all field work and be available for inspection by the external examiners.

(b) *Identification*—Elementary knowledge of plant and animal classification—the use of a flora and other keys.

2. GENERAL CONCEPTS

(a) Adaptation to environment of at least two named plants, and two named animals, freely chosen.

(b) Competition and study of the factors influencing the occurrence of any organism in its community.

(c) Succession—build-up of communities.

(d) Natural selection.

Section G. Weather

Basic weather recording instruments : maximum and minimum thermometer, anemometer, barometer, sunshine recorder, rain gauge, hygrometer.

Practical weather recording of local conditions using these instruments.

Relationship to soil cultivations, plant growth and cropping programme.

Daily recordings with monthly and yearly summaries.

Weather formations, seasonal differences, cloud forms and regional variations.

Air pressure and wind, Beaufort Scale.

Weather charts and maps. Brief details of weather forecasting. Local weather lore.

A local study relating climate conditions to seasonal work, plant growth and cropping programme with special reference to prevailing winds, rainfall, frosts, hours of sunshine, humidity and soil temperatures.

Section H. Bee-keeping

The Colony—its members, their origin, nutrition and life cycle. A year's cycle in a colony. Swarming. Organisation of work and behaviour in the hive and in the field.

Anatomy and Physiology of the Honey Bee—mainly those parts relevant to practical beekeeping, e.g., external anatomy, alimentary system, glandular system, sense organs, sting and venom.

Disease—Dealing in an elementary way with the four main diseases and their treatment or eradication (acarine, nosema, A.F.B. and E.F.B.).

Hives and Equipment—Fundamental requirements and different types available, including extracting and personal equipment.

Beekeeping—The year's work and basic manipulations.

Bee flora—An idea of the main nectar and pollen producing flora and their periods of flowering. Study of the structure of a clover and apple flower. Pollination—its importance in fruit and seed growing.

Honey—Composition of nectar and its conversion to honey. Average composition of honey and its properties, e.g., water content, granulation, fermentation, etc. Extracting and preparation of honey for use.

PRACTICAL WORK*Principles of Rural Studies***1. SOIL AND CLIMATE**

- (a) Take a soil sample, test for pH value.
- (b) Collect four weeds of arable and four weeds of grassland with methods of control.
- (c) Identify six invertebrates found in the soil, label as beneficial or harmful.
- (d) Demonstrate a method of mechanical analysis to determine soil type.
- (e) Determine humus and water content of soil.
- (f) Demonstrate the ability to use the following garden tools :
Fork, spade, Dutch and draw hoe, and rake.

2. PLANT STRUCTURE AND FUNCTION

- (a) To examine a complete plant, e.g., a bulbous buttercup, and point out all the main parts, e.g., flower, flower buds, leaf, stem and root and state briefly the functions of each.
- (b) Having made a collection of climbing plants found on the school premises, explain why climbing is necessary and how it is achieved in such plants as garden peas, marrows, greater bindweed, dog roses, goosegrass, nasturtium, ivy.
- (c) Make a collection of named fruits and seeds of cultivated plants or weeds in the school garden and explain how they are adapted for dispersal; e.g., dandelion, willow herb, sycamore, pine, snapdragon, poppy, geranium, broom.
- (d) The scholars will be shown a collection of plants with special storage organs, e.g., tubers of potatoes, crocus corms, iris rhizomes, dahlia tubers, shallot bulbs, top rooted parsnips: they will identify these, pointing out any particular characteristics, together with methods of propagation.
- (e) Indicate on a large flower, e.g., foxglove, nasturtium, the following, stating the functions of each: sepals, petals, stamens, anthers, pollen, stigma, explain pollination, fertilisation, and the subsequent development of fertile seeds.
- (f) Set up in the laboratory an experiment to illustrate osmosis (using a potato) or transpiration (potometer). Answer questions based on your observations.

3. ANIMAL STRUCTURE AND FUNCTION

- (a) Keep any insect or insects in captivity for at least a month. Keep records of dates of hatching, moults, pupation, emergence, as appropriate.
- (b) Collect and preserve six specimens of any three named insect pests of a cultivated plant. Preserve it together with a preserved specimen of a plant or a drawing or photograph showing as far as possible the damage done by it.
- (c) Care for cage birds or poultry for at least *one week*. Keep records of feeding and other activities. Look after an incubator or day-old chicks, assisting in the keeping of group records.
- (d) Care for any named mammal for at least *one week*. Keep records of feeding and other activities.
- (e) Examine dissection of a bird : Identify (a) organs of digestion (b) reproduction (c) excretion (d) heart (e) lungs (f) diaphragm.

OPTIONAL STUDIES

Section A. Fruit

- (a) Plant out a stool bed. Show distance of planting, cutting-down and method of earthing up.
- (b) Demonstrate the method of layering.
- (c) Cut suitable scion wood, bundle, label, and plant on a North side.
- (d) Cut scion material and show :
 - (i) length of scion wood for grafting purposes ;
 - (ii) use a known method of grafting ;
 - (iii) unite with stock, tie and wax.
- (e) Demonstrate budding (Summer time).
- (f) Show the examiner a cordon. Explain bush, pyramid, half standard, and full standard.
- (g) Demonstrate the method of training of either a bush or cordon, or espalier tree.
- (h) Produce a cutting of a blackcurrant, a redcurrant, and a gooseberry. Prepare and plant.
- (i) Prune or part prune (i) blackcurrant, (ii) redcurrant, (iii) gooseberry.
- (j) Summer prune a top fruit tree.
- (k) Winter prune to show a renewal method of pruning, and the cutting out of unwanted growth.
- (l) Plant, stake, and tie up either a cordon, espalier, fan, bush, or standard fruit tree.

Section B. Vegetable Gardening

- (a) Prepare a bed and plant cabbages for Spring cutting.
- (b) Remove suckers, tie in plants and earth celery for first time.
- (c) Lift, prepare for storage, and store one of the following crops :
Swedes. Beet. Potatoes. Onions. Shallots. Carrots.
- (d) Prepare a seed bed and sow a row of large-seeded plants, e.g., Broad Beans.
- (e) Prepare a seed bed and sow a row of small-seeded plants, e.g., Carrots.
- (f) Stake a row of peas and runner beans.
- (g) Double dig and manure a section of the garden.
- (h) Thin a row of seedling plants, e.g., Carrots, Beet, Onions.
- (i) Set up potatoes in trays for sprouting, and plant a row of potatoes.
- (j) Plant a row of green plants in early Summer, e.g. :
Brussels Sprouts, Savoy or Cauliflower.
- (k) Identify a pest or disease of a vegetable. Where possible, take action (picking off, spraying, etc.) to remove the pest or disease.
- (l) Stake and plant out a row of tomato plants.

Section C. Controlled Environment

- (a) Calculate the cubic capacity of a glasshouse.
- (b) Read and reset a maximum and minimum thermometer, keep a graphical record of these temperatures for at least a week.
- (c) Demonstrate the ability to water, ventilate and regulate heat within the glasshouse.
- (d) Erect a cloche.
- (e) Mix John Innes Composts.
- (f) Sow a box of seed, sow a box or pan of large and small seeds.
- (g) Prick out a box of seedlings.
- (h) Pot three plants, and pot on three plants.
- (i) Take four softwood cuttings, prepare and insert.
- (j) Demonstrate one other method of vegetative propagation and use under glass.

Section D. Decorative Horticulture

- (a) Identify 10 hardy or half-hardy annuals ; 5 herbaceous perennials.
- (b) Propagate a flowering or berried foliage shrub.
- (c) Prune a flowering, berried or foliage shrub.
- (d) Make a seed bed and sow biennial seeds in a garden plot.
- (e) Mix correct compost and plant bulbs in a pot.
- (f) Identify a pest or disease, select the correct spray and mix. Spray a rose bush, chrysanthemum or dahlia plant.
- (g) Plant a shrub.
- (h) Lift and store dahlias or chrysanthemums correctly.
- (i) Plan a border with hardy annuals, half-hardy annuals, or biennials.
- (j) Sow half-hardy annuals or sweet peas in a box or seed pan.
- (k) Prick out a box of half-hardy annuals.
- (l) Propagate dahlias or chrysanthemums by cuttings.
- (m) Make a simple floral arrangement for a named purpose.

Section E. Animal Husbandry

1. RABBITS

- (a) Handle and groom a rabbit including sexing.
- (b) Skin a rabbit and prepare for table use.
- (c) Prepare a skin for drying and curing.
- (d) From a trio of rabbits judge the best, giving reasons.
- (e) Collect and identify six suitable wild food plants for rabbits.
- (f) Care for rabbits for at least one week, feeding, water and maintenance of hygiene.

2. POULTRY

- (a) Demonstrate the procedure for incubating eggs, and keep records during incubation period.
- (b) Fit up a brooder for chick rearing, and care for young stock for at least one week.
- (c) Grade a dozen eggs.
- (d) Cull a bird from laying stock giving reasons.
- (e) Pluck a bird.
- (f) Draw and truss a table bird.

3. PIGS

- (a) Show an ability to drive a pig.
- (b) Accurately weigh a ration and feed.
- (c) Weigh and worm a pig following simple makers instructions.
- (d) Demonstrate the points of a good bacon or pork animal.

4. GOATS

- (a) Prepare a goat for milking and milk her.
- (b) In the dairy go through the procedure of recording and preparing the milk for sale.
- (c) Groom a goat and trim the hoofs.
- (d) Make either cheese or butter.
- (e) Take the goat to pasture and tether on a running chain.
- (f) Sterilisation of dairy equipment.

5. Cows

- (a) Ability to halter and lead a calf.
- (b) Accurately weigh a ration of concentrates and bulky foodstuffs.
- (c) Milk by hand or machine, using correct routine.
- (d) Wash and sterilise milking equipment.
- (e) Groom and prepare for show.
- (f) Demonstrate the points of a good dairy animal.

Section F. Ecological Study

1. Identify given flowering plants common in the area by use of any flora or suitable identification book.
2. Identify an animal from one of a group chosen for study by means of keys or identification books.
3. Make a quadrat study or a transect study of a plant community and present for examination, pressed and identified specimens of the plants found in these communities, and written records of results of study.
4. EITHER make a preserved collection of animals taken from a community which has been studied and present an account of the community (candidates must be discouraged from collecting anything but common species). An attempt should be made to draw conclusions about interactions within the community.

OR :

Set up a live collection of animals studied, and maintain for a suitable period depending on species. Present an account of the community studied and the methods of maintaining the collection.

Section G. Weather

1. Keep a temperature record for one month keeping a graph of maximum and minimum and mean temperature.
2. Keep a rainfall record for one month, keeping a graph of daily rainfall.
3. Demonstrate the ability to read a simple weather map.
4. Name and identify four cloud forms and indicate weather patterns associated with these forms.
5. Use and record all basic instruments used in a school weather station. weather station.

Section H. Bee-keeping

1. Open a colony and point out six of the following :
Worker cells. Drone cells. Sealed worker brood. Worker larva.
Sealed drone brood. Stored pollen. Stored honey. A worker bee.
A drone (if present). A bee carrying pollen.
2. Assemble a frame correctly, or place out an empty hive ready for a swarm and then add a super.
3. Indicate on a bee flower the following : the petals, the stamens, anthers and pollen, and stigma.
4. Examine specimen for acarine disease.
5. Uncap frames of honey, extract, strain, ripen and bottle.

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 14

Science Syllabuses
1966

SECRETARY: A. JOHNSON, M.Sc.
THE LINDENS, LEXDEN ROAD, COLCHESTER, ESSEX

SCIENCES

The Board offers Mode 1 examinations in a range of subjects as follows :

- Biology.
- Chemistry.
- General Science.
- Human Biology.
- Physics.
- Physics with Chemistry.

Entry for examinations in these subjects is restricted so that at the same series of examinations a candidate may not enter for

- (a) General Science *and* Physics with Chemistry.
- (b) Biology *and* Human Biology.
- (c) General Science *and more than one* of the subjects Biology, Chemistry, Human Biology, Physics.

SCIENCES (North)

In compiling the syllabuses the Board has felt strongly that all students specialising in one branch of Science should possess knowledge of a wider scientific background to everyday life, as well as competence in their particular branch. To this end all students will take a paper, requiring only brief answers, on Basic Science. The candidates will then be examined in each of the specialist Science subjects by a written paper and a practical examination. In place of the practical examination, the candidate may offer evidence of study of a suitable topic which has been the candidate's individual work over a period of at least six months during the final year. This topic should involve work of a practical scientific nature, and the candidate will be given an oral test on the topic.

BIOLOGY (North)

(a) *Paper I Basic Science 1 hour duration 25%*. (b) *Paper II Biology 2½ hours duration 60%*. (c) *Practical examination 1½ hours duration 15%*. or (d) *Topic 15%*.

PAPER I

Matter

1. The particulate nature of matter ; Brownian movement. Atoms, molecules and ions. Elements and compounds. Simple atomic structure ; protons, neutrons and electrons, including simple idea of radio-activity.
2. Density and specific gravity of solids and liquids using measuring cylinder and balance.
3. The solar system and its place in the universe (excluding treatment of tides and eclipses). The sun as a source of energy.
4. Composition of the air. Burning, breathing, rusting and products of combustion. Properties and uses of oxygen and carbon dioxide.

5. Composition of water (excluding electrolysis). Water as a solvent. Hardness of water, simply treated. Filtration; crystallisation.
6. Common acids and alkalis; use of an indicator; neutralising effect.
7. Formation of soil; weathering; composition of soil—sand, clay and humus.

Energy

8. Mass, weight and force. Simple idea of a force producing or preventing motion, examples including friction. Simple levers and their everyday application. Atmospheric pressure; simple mercury and aneroid barometers. Water pressure, measured as head of water.
9. Kinetic theory of heat. Conduction, convection and radiation and applications. Heat and temperature. Thermometers. Celsius and Fahrenheit scales (excluding conversions). Effects of heat on matter—solid, liquid, gas. Expansion of solids, liquids and gases, including the anomalous expansion of water. Water cycle; evaporation, condensation and distillation; cooling effect of evaporation.
10. Light as a form of energy. Rectilinear propagation and velocity. The visible spectrum and its production. Reflection from matt and polished plane surfaces. Real and virtual images. Simple refraction leading to the properties and uses of a convex lens with reference to the magnifying glass, camera and eye.
11. Sound as a form of energy. The nature, production and propagation of sound including the need for a material medium.
12. Elementary magnetism; properties of magnets; laws of attraction and repulsion. Magnetic fields. Magnetic and non-magnetic substances. The earth as a magnet.
13. Electricity as a flow of electrons; conductors and insulators. The effects of electricity on matter—heating, chemical, magnetic. Simple circuits (excluding Ohm's law)—cells in series, two lamps in series or parallel, use of single way switches and fuses. Electrical units—voltage, current, wattage; costing of electricity. Simple production of an alternating current by coil and magnet.
14. Transformation of energy—examples in respect of mechanical (kinetic and potential), chemical, heat, light, sound and electrical forms.

Living Things

15. Characteristics of living things. Cellular structure of plants and animals; plant and animal cells.
16. Plants. Simple classification (flowering and non-flowering). Simple study of the functions of the main parts of a flowering plant—root, stem, leaves, flowers. Methods of pollination and seed dispersal. Conditions for germination.
17. Animals. Simple classification. Vertebrates—fish, amphibians, reptiles, birds, mammals. Invertebrates—protozoa, coelenterates, annelids, molluscs, arthropods. A simple understanding of the main systems of the human body, (respiratory, circulatory, digestive, excretory, reproductive, nervous). Role of skeleton and muscles.
18. Useful and harmful bacteria. Fight against disease through personal hygiene. Immunisation. Preservation of food.
19. The inter-relationship between the plant and animal kingdoms. Food chains. The balance of nature.

PAPER II

Note: In all practical work associated with this syllabus it is important to stress the need for controls when experimenting with living organisms.

GENERAL

1. (a) *Characteristics of Living Things*

Common essentials for all living things (heat, moisture, oxygen). Nutrition, locomotion, respiration, response to stimuli, reproduction and growth. Differences and similarities in the structure of animal and plant cells.

(b) *Simple Classification of Plants and Animals*

(Latin terms will not be required.)

ANIMALS—Vertebrates and invertebrates.

Vertebrates—classified further to Mammals, Birds, Reptiles, Amphibians and Fishes.

Invertebrates—Protozoa, coelenterates, annelids, molluscs, arthropods. Classify the arthropods further to insects, crustaceans, spiders, millipedes and centipedes.

PLANTS—Flowering monocotyledon, dicotyledon. Non-flowering algae, lichens, mosses and ferns.

2. *Inter-Relationship of Living Things*

The balance of nature and man's responsibility in using and conserving the living things of the world in which he lives. (Erosion, pollution, pest control, radio-active fall-out, weed control). Study of life cycles for the purpose of control, e.g., malarial mosquito, liver fluke. Insect pests and modern methods of control. Study of the life cycle of any two insects *useful* to mankind and which show complete and incomplete metamorphosis.

3. *Ecology*

Effect of environment on plants and animals. Adaptations for extremes of environment. Camouflage and warning colouration. Simple concept of evolution.

4. *Bio-Physical Principles*

Diffusion, e.g., feeding and respiration in plants. Osmosis. Surface tension, e.g., Aquatic insects and birds. Capillarity, e.g., Transpiration. Air Pressure, e.g., Respiration. Levers, e.g., locomotion in animals. Heat and Temperature, e.g., Control of temperature. Adaptation of living things to extremes of temperature.

5. *Bio-Chemical Principles*

Tests for oxygen, carbon dioxide, water, acids and alkalis. Simple ideas of pH values.

ANIMAL BIOLOGY : with particular reference to Mammals.

6. *Animal Cell Structure*

e.g., blood, muscle and skin cells.

7. *Respiration*

(a) Mechanics of breathing in mammals. Liberation of energy with associated waste products. Artificial respiration, expired air method.

(b) Mechanics of breathing in fish and insects.

8. *Circulation*

Function of blood, heart, arteries, veins, capillaries, lungs. Part played by the blood in respiration and nutrition.

9. *Nervous System*

Simple knowledge of the structure and function of the nervous system and the part played by the brain and spinal cord. Voluntary and involuntary actions. Simple structure of the eye and ear.

10. *Digestion*

General outline of digestive system in Man. Position and function of main organs. (Teeth, salivary glands, gullet, stomach, duodenum, pancreas, liver, gall bladder, intestines). Main classes of food including vitamins and mineral salts. Tests for protein, starch, reducing sugar, fat.

11. *Elimination*

Position and function of kidneys and bladder. Skin and sweat glands. Lungs. Faeces—need for water and roughage.

12. *Reproduction*

Fertilisation of an animal cell. Development of embryo (division specialisation and growth) in chicken and mammal. Comparison of reproduction in protozoa, hydra, earthworms, frogs, birds and mammals from marsupials to man. Degrees of parental care. Simple treatment of Mendelism.

13. *Locomotion*

Skeletal system for support, attachment of muscles and protection of organs. Types of joint. Work done by muscles. Products of muscular activity. Importance of training and "warming up" for athletic events. Locomotion in mammals and fish.

14. *Simple Knowledge of the Biological Problems involved in Space and Deep Sea Exploration*

15. *Health and Hygiene*

Importance of personal cleanliness. Simple study of the history of antiseptics, antibiotics, vaccines, serums and the work of Lister, Pasteur, Jenner, Fleming. Natural immunity and immunisation. Harmful effects of alcohol, tobacco and other habit forming drugs. Dental hygiene. Structure, function and decay of teeth. Causes and effects.

PLANT BIOLOGY

16. *Soil*

Formation, structure and composition. Soil husbandry.

17. *Cell Structure*

Examples from root, stem and leaf.

18. *Respiration*

Emphasis on respiration taking place at all times and in all parts of the plant.

19. *Photosynthesis*

Emphasis on conditions necessary and energy conversion. Storage of food by modified root, leaf, stem, and seed.

20. *Transpiration*

21. *Grown and External Features*

Functions of the parts of a named flowering and named non-flowering plant. Root systems, stems, leaves. Tropisms. Phototropism. Geotropism. Hydrotropism.

22. *Reproduction*

Principles of sexual and asexual reproduction (including vegetative). The flower. Pollination and fertilisation. Seed production and dispersal. Germination and necessary conditions.

23. *Bacteria, Parasitic and Saprophytic Plants*

Life cycle and nutrition of a named parasitic plant. Agents for plant decay, composting. Nitrogen fixation. Fermentation. Disease causing bacteria. Work of Pasteur. Life cycle of mushroom. Recognition of Fly Agaric and Death Cap.

CHEMISTRY (North)

(a) *Paper I Basic Science 1 hour duration 25%*. (b) *Paper II Chemistry 2½ hours duration 60%*. (c) *Practical examination 1½ hours duration 15%*. or (d) *Topic 15%*.

PAPER I

The syllabus and examination will be the same as those for Biology (North) (see page 2).

PAPER II

The syllabus is presented in two main sections, 1-5 and 6-12.

Paragraphs 1-5 represent a theoretical basis for understanding Chemistry as a series of phenomena which can be related in terms of the behaviour of atoms, molecules and electrons.

These basic ideas should develop from a course using experiments—performed wherever possible by the pupils.

First section provides a broad enough base for the individual teacher to introduce into the course some aspects of Chemistry he considers to be particularly appropriate and with this in mind the content of the syllabus has been kept to a minimum.

1. *Nature of Matter*

Solids, liquids and gases, determination of melting point and boiling point. Inter-conversion of states. The kinetic theory.

2. *The Atom*

The atom and sub-atomic particles simply as the proton, neutron and electron. Atomic number. The combination of atoms to form molecules. Radio-active elements.

3. *Chemical Change*

Elements, compounds and mixtures. The conservation of mass and constant composition. Symbols, formulae and equations. Atomic and molecular weights, and simple calculations based on them.

4. *The Nature of the Chemical Bond*

The whole to be treated simply; electro and co-valencies. Electron transfer from metallic to non-metallic elements, to form ions, and thus electrolytes. Electron sharing to form covalent bonds, non-metallic to non-metallic and thus non-electrolytes. Electrolysis. The conduction of electricity by salts, acids and bases. Electrolytes and non-electrolytes.

5. *The Periodic Table*

Simply treated to show that the formation of compounds is not a haphazard matter.

6. *The Air*

The role of air in combustion; combustion of fuels; rusting of iron. Composition of the atmosphere; polluting agents. Respiration in plants and animals. Solubility of air in water. Methods of obtaining oxygen and nitrogen from the air (details of industrial processes not peroxide and manganese dioxide. Production of carbon dioxide as a result of combustion. Preparation and properties using a carbonate and an acid. Uses of carbon dioxide.

7. *Water*

Composition. Action of water with potassium, sodium, magnesium and calcium and of steam on iron. Preparation of hydrogen using zinc and sulphuric acid. Synthesis of water by burning hydrogen in air; either as an experiment (with due care), or by referring to everyday examples of hydrogen-containing fuels. Water as a solvent; (note atmospheric carbon dioxide). Solubility and the effect of temperature, including solubility curves. Other solvents. Purification by filtration of water treated simply. The causes and effects of hardness. Methods of softening hard water.

8. *Acids, Bases and Salts*

Characteristics; indicators (including universal); pH as a measure of acidity—soil testing and the importance of lime in agriculture. The common acids, both inorganic and organic. Common bases. Salt formation from acid plus base and acid plus metal. Neutralisation. The whole of this section to be applied to everyday substances. *Introduction to simple qualitative analysis.* Sulphides, hydroxides, nitrates, chlorides, sulphates and carbonates. Reduction of oxides on charcoal. Flames tests for potassium, sodium, calcium and copper.

9. *Non-Metals*

Carbon. Its properties and uses. Allotropic forms; release of energy of oxidation by the burning of fuels forming carbon dioxide. Carbon monoxide as a result of incomplete combustion and its dangers (e.g., coke stoves and exhaust fumes). Bicarbonates and carbonates of sodium and calcium. Weathering of limestone.

Nitrogen. Its properties and uses. Importance of compounds in nature (nitrogen cycle); properties and uses of ammonia and ammonium salts. Properties and uses of nitric acid, sodium, potassium and ammonium nitrates.

Sulphur. Its sources, properties and uses. Properties and uses of sulphuric acid. Sodium, magnesium, copper and iron sulphates.

Chlorine. Its properties and uses. Laboratory demonstration of electrolysis of brine. Properties and uses of hydrochloric acid, sodium and distillation. Crystallisation. Temporary and permanent hardness and calcium chlorides.

10. Metals

Properties (including physical) affecting the common use of magnesium, aluminium, zinc, iron, lead, copper, tin and alloys such as brass, type metal, duralumin, solder and magnetic alloys. The activity series. Sodium—well-known salts; soap and action of soap and soapless detergents compared. Calcium—preparation of oxide and hydroxide. Uses in agriculture and water softening. Gypsum and plaster of Paris.

11. Simple Organic Chemistry

A study of the properties and family characteristics of at least *one* of the organic groups such as the paraffins, alcohols, fatty acids, etc.

12. The Chemical Industry

No details of the technical plant are required, but a knowledge of the chemistry of the process is necessary. Production of a named metal from an ore. Synthesis of ammonia; contact process for sulphuric acid; electrolysis of sodium chloride; electrolytic refining of metals. The production of coal gas and its immediate by-products. In addition one East Anglian Industry, for example, cement, sugar, leather, fertilisers, paints, plastics, iron and petroleum.

GENERAL SCIENCE (North)

(a) Paper I Basic Science 1 hour duration 25%. (b) Paper II General Science 2½ hours duration 60%. (c) Practical examination 1½ hours duration 15%. or (d) Topic 15%.

PAPER I

The syllabus and examination will be the same as those for Biology (North) (see page 2).

PAPER II

Materials

The particulate nature of matter: atoms, molecules and ions. Simple atomic structure. Electrons, neutrons, protons.

Air. Its composition, liquifaction, fractional distillation to obtain oxygen, nitrogen, and inert gases. (Industrial processes not required.) Properties and uses of oxygen. Combustion. The nitrogen cycle and fixation of nitrogen by lightning. The balance of carbon dioxide and oxygen in nature.

Water. Its composition. Saturated and unsaturated solutions, suspensions and emulsions. Filtration. Evaporation and boiling. The effect of pressure on freezing and boiling points. Distillation, crystallisation. Dissolved air. Surface tension and capillarity.

The Earth's Crust. The formation and nature of soil. The scientific basis of weathering. Elements, mixtures and compounds. Physical and chemical changes. Density of solids measured by cylinder and balance: density of liquids by pipette and density bottle. (Simple calculations.) Properties of metals and non-metals, metallic and non-metallic oxides. Sources, simple extraction and uses of iron, aluminium, copper, sulphur, carbon, phosphates, nitrates and common salt. Prevention of corrosion. Alloys and their uses; steel, duralumin, brass, and solder (percentage composition not required). Natural calcium carbonate. Man's use of quick lime, slaked lime, mortar, cement and concrete.

Natural Phenomena

Animate. The balance of nature. Inter-relationship of living things in the plant and animal kingdoms; variation of needs according to environment. The differences and similarities in the structure of plants and animals, their activities and behaviour. Man's responsibility in his disturbance of the balance of nature. The life-cycle, germination, growth, photosyntheses and respiration, pollination, seed production and dispersal of a named plant.

Inanimate. Light: the sun and other sources of light, Rectilinear propagation. Shadows. Reflection at plane surfaces, matt and polished surfaces, curved surfaces. The laws of reflection. Position and nature of images in a plane mirror. Uses of curved mirrors. Simple experimental treatment of refraction. The real and virtual images produced by a convex lens (no ray diagram). Total internal reflection and critical angle. The dispersion of white light by a prism. The visible spectrum. The recombination of its colour. Colour mixing by addition, colour filters, excluding pigments.

Sound. Production of sound by vibrations. Transmission in a material medium. Velocity, frequency and wavelength. Amplitude, reflection and echoes. Factors affecting the pitch of a stringed instrument and a wind instrument.

Wind. Atmospheric pressure. The simple mercury barometer and aneroid barometer. The use of the barometer in simple weather forecasting and as an altimeter.

Rain. The water cycle. Conservation of water. Pressure as 'head of water'.

Lightning. Electrostatic charges treated simply. Lightning conductors.

The Universe. Galaxies. The sun as a star. The solar planetary system. The seasons. Eclipses of the sun and moon. Tides. Natural satellites.

The Human Body

Reproduction. Fertilisation. Development of the embryo. Parental care.

Locomotion. Skeleton for protection, support and attachment of muscles. Types of joints. Action of muscles. Products of muscular activity; heat, water and carbon dioxide.

Respiration. Lungs; liberation of energy, waste products.

Circulation of the blood. Heart, arteries, veins and capillaries.

Digestion and Assimilation. Position of salivary glands, gullet, stomach, duodenum, pancreas, liver, gall bladder, intestines.

Elimination. Kidneys, bladder and skin. Faeces and roughage.

Sensory organs. The eye. Short and long sight, and their correction. The ear. The part played by the brain and spinal cord. Normal body temperature and its control.

The Requirements of the Human Body

Food. Main classes of food from plants and animals. Tests for starch, reducing sugar and protein. The importance of minerals and vitamins.

Water. The public water supply.

Health. The importance of personal hygiene. Natural and artificial resistance to disease.

Home. Heating methods : radiation, convection and ventilation, conduction and insulation. Thermal expansion of solids, liquids and gases. Use of maximum, minimum and clinical thermometers. Celsius and Fahrenheit scales and conversion. Quantities of heat—calorie, British Thermal unit, and therm. (Simple calculation.) Thermal capacity. Latent heat (qualitatively). Fuels in the home: solid, liquid and gas. Oil distillation. Destructive distillation of coal. The sun as the original source of energy. Electricity for heating and light. House wiring, and safety precautions. Buying electricity. (Simple calculations.)

Energy

Mechanical Energy. Forces. The simple idea of a force producing movement and acceleration. Inertia. Force of gravity. Centre of gravity and stability. The uses and disadvantages of friction. Levers and simple pulley systems. Mechanical advantage, velocity ratio, work (ft. lb. wt.) and efficiency. (Simple calculations.) Transformation of different forms of energy. Kinetic and potential energy (qualitatively).

Electrical Energy. Electricity as a flow of electrons. Conductors and insulators. Resistance.

The effects of an electric current. (a) *Heating.* (b) *Chemical* : electrolysis of acidulated water, copper sulphate solution. Electroplating. (c) *Magnetic* : the field of a current carrying conductor as a straight wire, loop, and solenoid. Electro-magnets and their uses. The behaviour of a current carrying coil in a magnetic field. A simple permanent magnet type of two-pole motor.

Production of electricity. Dry Leclanché and lead-acid cell. Care of car battery and use of hydrometer. Electro-magnetic induction. A simple permanent magnet type generator, i.e., cycle dynamo. Alternating current. The principle of the transformer and the induction coil (with reference to the car ignition system). The National Grid System. Use of the turbine. Nuclear energy in the power station.

Circuits. Cells in series and parallel. Lamps in series and parallel. Measurement of current and voltage. Calculation of wattage.

Communication

Sound. Carbon granule or moving coil microphone. Bell receiver or moving coil loud speaker.

I.C. Engines. The two-stroke and four-stroke cycles. Spark and compression ignition. The principle of the carburettor.

Water. The upthrust of fluids. Buoyancy and flotation.

Air. Air over an aerofoil. The principles of the airscrew and jet propulsion. Problems of reduced pressure with altitude. Speeds faster than sound, Mach number. The principle of rocket propulsion. Acceleration needed to overcome 'g'. Inertia. Problems of space travel: 'weightlessness' and cosmic radiation. Heat on re-entry. Artificial satellites and their uses.

Magnetism as an aid to navigation. The earth as a magnet. Magnetic declination. Magnetic compass. Magnetic repulsion and attraction. Magnetic fields and screening.

PHYSICS (North)

(a) Paper I Basic Science 1 hour duration 25%. (b) Paper II Physics 2½ hours duration 60%. (c) Practical examination 1½ hours duration 15%. or (d) Topic 15%.

PAPER I

The syllabus and examination will be the same as those for Biology (North) (see page 2).

PAPER II

Items in italics will involve the use of calculations or graphical solutions.

The Physics examination paper will be divided into sections according to subject headings, Light and Sound being combined in one section.

Candidates will be required to attempt questions from at least *four* sections.

SECTION A. MECHANICS

1. Relationship between mass, force, and weight—Simple ideas of force producing or preventing motion. Examples, including friction. *Velocity and acceleration. Calculations involving uniform acceleration from rest.*
2. Density—of solids by direct weight and volume displacement and of liquids by relative density bottle. *Relative density (Specific gravity).*
3. Pressure—
 - (a) *Force per unit area.*
 - (b) Pressure in liquids—*Water pressure depends upon depth, (Head of water). Water exerts a pressure in all directions. Hydraulic press, lifts, brakes. Archimedes' Principle. Flotation. Hydrometers.*
 - (c) Pressure in gases. Air pressure. Measurement—mercury and aneroid barometers. The Syringe. *Boyle's Law. Measurement of pressure in gas supply—Manometer.*
4. Moments—*Principle of moments (Forces at right angles to the lever). Centre of Gravity. Stability.*
5. Machines—Everyday levers, Simple pulleys. *Mechanical advantage. Velocity ratio. Efficiency.*
6. Principle of Work—*Measurement of work, Power. Horse Power. Kinetic Energy. Potential Energy. Transformation of Energy. Sources of Energy.*
7. Parallelogram of Forces—*Resultant of two forces acting at a point.*
8. Elasticity—*Hooke's Law.*

SECTION B. HEAT

1. Heat as a form of Energy—Contraction and expansion of solids, liquids and gases based upon the Kinetic Theory of matter. Uses to which this knowledge is put. *Coefficient of Linear Expansion.*
2. Temperature—Differences between Heat and Temperature. How temperature is measured. Celsius (Centigrade), Fahrenheit and Kelvin (Absolute) scales.
3. Thermometers—Fixed points, Mercury and Alcohol in glass—limitations in use. *Conversion of scales. Clinical and Six's Maximum and Minimum. Pyrometers—(Thermocouple, Optical).*

4. Transference of Heat—Conduction, Convection and Radiation—applications. Insulation—applications.
5. Measurement of Heat—units of heat. *Calorie, Kilo-Calorie, B.T.U. Therm. Specific heat of solids and liquids.* Effects of high specific heat of water.
6. Changes of State—related to Energy, temperature and pressure. Freezing and Boiling points—effect of pressure. Cooling effect of evaporation—applications, e.g., Principle of Refrigeration.
7. Heat Energy—Production from other forms of energy.
8. Heat Engines—Principles of the two-stroke and four-stroke engines. Turbines. Jet and Rocket propulsion.

SECTION C. LIGHT AND SOUND

1. Light as a form of energy.
2. Propagation—Shadows, eclipses, pin-hole camera. Speed of light.
3. Reflection—From plane surfaces, matt or polished. Nature and position of image in a plane mirror—involving knowledge of laws of reflection. Uses of reflection, e.g., driving mirrors, periscope. Curved mirrors; concave and convex, examination of images formed. Nature and position of images. Use of ray diagrams. Uses: e.g., reflectors, driving and shaving mirrors, reflecting telescope.
4. Refraction—Refraction at air/glass and air/water. Apparent depth. Critical angle. Total internal reflection. Use of prisms. Lenses. Convex and concave. *Nature and position of images.* Ray diagrams. Camera—eye. Long and short sight. The projector—purpose and use of light source, mirror, condenser, object, projection lenses.
5. Colour—Dispersion. Visible spectrum—relationship with spectrum of all known electro-magnetic radiation. Absorption and reflection effects. Effect of source, e.g., comparison of sunlight and fluorescent light sources on coloured material.
6. Special light effects—e.g., Photo-electric cell. Comparison of hot wire and fluorescent lamps as economic and reliable sources.
7. Sound—Its production and propagation. *Velocity. Frequency. Wavelength.* Pitch. Resonance. Reflection—echoes.
8. Doppler effect.

SECTION D. MAGNETISM AND ELECTRICITY

1. Simple properties of magnets—Magnetic and non-magnetic substances. Fields. Lines of force. Earth's field, compass.
2. Manufacture of magnets—Stroking, solenoid. Demagnetisation. Induction—screening.
3. Molecular theory of magnetism—study as an aid to understanding magnetic phenomena.
4. Electrostatics—Charged bodies. Existence of two types of charge and their inter-action. Conductors and insulators. Simple induction.
5. Current electricity—Electron flow. Conductors and insulators.
6. Effects of Current—
 - (a) Magnetic effect—Oersted's experiment. Single wire. Single turn. Solenoid. Coil with soft iron core. Electromagnets and their uses, e.g., trembler bell, two-pole motor. Force on conductor carrying a current in a field. Moving coil and moving iron voltmeters and ammeters.
 - (b) Heating effect. Applications, e.g., fires, lamps, fuses.
 - (c) Chemical effect. Electrolysis of copper sulphate. Electro-plating.

7. Cells—Differences between primary and secondary cells. Polarisation, and local action. Dry Leclanché. Lead accumulator and its care. (No chemical equations required.)
8. The electric circuit—Measurement of potential difference and of current. *Ohm's law. Measurement of resistance using voltmeter and ammeter. Resistance in series and in parallel* (excluding internal resistance of a cell). *Cells in series and in parallel.*
9. Power and energy—*The watt as a unit of power. Measurement of energy in kilowatt hours. Costing.*
10. The thermo-electric effect—thermocouple and its uses.

SECTION E. ATOMIC PHYSICS

The inclusion of this study is facilitated by the rapid introduction of suitable equipment at reasonable prices by main suppliers. There are good films and generous help from the Atomic Energy Authority. The subject requires the study of Section D paragraphs 4 and 6 (c) on which questions may be set.

1. Structure of matter—Dilution—weak solutions. Brownian movement. Diffusion. Surface tension. Capillarity. Cohesion. Adhesion. Thin films. Kinetic Theory.
2. Structure of the Atom—
 - (a) Nucleus—proton and neutron.
 - (b) Electron.
 Simple Bohr theory (orbiting electron). Isotopes.
3. Radiation—Alpha and beta particles. Gamma rays. Cosmic rays. Effect of absorption of radiation by matter, e.g., ionisation and photo-electric effects.
4. Detection of radiation—e.g., Electroscopes. Cloud chamber. Photographic emulsion. Geiger-Muller effect.
5. Fission and fusion. Processes. Application in bombs and reactors. Radio-isotopes. Tracer elements. Depth measurements. Age estimations.
6. Health Hazards—Shielding. Fall-out. X-rays.

SECTION F. ELECTRONICS

The basic electricity for this section is to be found in Section D, paragraphs 1, 5 and 7, on which questions may be asked.

1. Thermionic emission—
 - (a) The diode. *Anode characteristic.* Use of diode as a rectifier or signal detector.
 - (b) The triode. *V_g/I_a characteristic.* Triode as an amplifier.
 - (c) Cathode Ray Tube. Demonstration of construction and operation.
2. Electro-magnetic radiation—Principle of radio transmission, including reflection from ionised layers and satellites. Amplitude modulation. *Frequency, wavelength, velocity.*
3. The crystal diode—as a signal detector.
4. The transistor—Simple detail of its practical operation and characteristic curve (I_b/I_c) P.N.P. type.
5. The parallel tuned circuit—Its use of capacitance and inductance. Simple ideas of damped oscillations and resonant frequency.
6. Microphone—Carbon. Telephone earpiece. Moving coil loudspeaker.
7. Receivers—
 - (a) The crystal set.
 - (b) Single valve receiver.
 - (c) Diode with transistor amplifier.
8. Simple one-valve audio oscillator.

SCIENCES (South)

The Board hopes that a General Science course will be followed for the first three years in the secondary school, but it is not proposed to examine on this part of the course.

The syllabuses which follow are intended for the fourth and fifth years, and each syllabus has been drafted on the assumption that five 40-minute periods per week will be devoted to the subject in each of these years.

BIOLOGY (South)

(a) *Papers I and II each 1½ hours duration 75%. (b) Teacher assessment 25%.*

EXAMINATION NOTES

Each paper will be in two sections: each Section A will be made up of compulsory short answer questions (to take about ½ hour) and each Section B will contain 8 questions requiring detailed answers of which 4 are to be attempted. 30% of the marks will be allocated to short answer questions and 45% to the longer questions.

It is expected that a reasonably good candidate will be able to complete each paper in 1½ hours, but an additional ½ hour may be taken if required.

SYLLABUS NOTES

The course is not intended to be book-based. Detailed teaching of named types is not required, except in the case of the mammal and a flowering plant.

Classification should be emphasised throughout, and great stress laid on outside field study, the interrelation of living things and their relation to their environment.

The importance of control experiments should also be emphasised.

It is hoped that pupils will have every opportunity to examine material, and that full use will be made of zoos, botanical gardens and museums.

TEACHER ASSESSMENT

The subject teacher shall award up to 25% of marks for field work, or some other suitable project proposed by the teacher and approved by the Board.

A suitable record, i.e., a practical note book or folder which shows quite clearly the range of work covered, should be compiled by the pupil.

Indications of the work on which the Teacher Assessment will be based should be submitted by individual schools to the Board before the end of September of the current school year.

A mark list showing Teacher Assessment shall be forwarded by the subject teacher to the Board on or before a date prescribed. The pupil's record may be inspected in the school by the examiner and samples may be required for moderating.

Some suitable topics for field work are suggested in the syllabus, but the teacher should feel free to make his own choice outside these.

There will be no practical examination set by the Board, but the teacher is free to use part of his 25% assessment mark for practical work if he wishes.

SYLLABUS

1. *Classification*

Broad outlines of, and interrelations between, all subdivisions of plant and animal life. This is intended as a short introduction to the course so that when a specific example is considered the pupils may place it in its correct phylum.

2. *Life Cycles* (Outline of stages only)

Frog, as an example of incomplete metamorphosis. Insect, e.g., moth or butterfly, as an example of complete metamorphosis.

3. *A Typical Mammal*

Rabbit or rat, with reference to, and comparison with man. Form : mammalian features. Functions, and interrelations of systems :

- (a) Skeleton—plan (Latin bone names not required), muscles and movement.
- (b) Circulation : blood, composition and functions ; heart, arteries and veins.
- (c) Respiration : mechanism of breathing ; release of energy.
- (d) Digestion : enzyme action (names of enzymes not required). Treat as a means of obtaining soluble and transportable material. Teeth, and their relation to diet.
- (e) Excretion : kidneys (excluding microscopic structure), skin and lungs.
- (f) Nervous system : general plan ; reflex arc ; eye and ear.
- (g) Hormones : outline of endocrine system. Function and effects of malfunction.
- (h) Reproduction (excluding embryology) : fertilisation, uterine existence, parental care.

4. *Typical Angiosperm*

Form and function of any easily obtainable flowering plant. Parts : stem, root, leaf, bud (modifications : e.g., underground storage). Functions : water and salt absorption and conduction ; transpiration ; photosynthesis, food conduction and storage ; respiration and growth ; sensitivity—tropisms ; reproduction—seeds, dispersal and germination ; vegetative reproduction.

5. *Economic Importance of Plants and Animals*

- (a) Plants : fibres (cotton, flax), timber, drugs, foods (oils, cereals, root crops).
- (b) Animals : bee, earthworm.
- (c) Fungi : penicillium, yeast.

6. *Food Chains*

7. *Human Nutrition*

Balanced diet. Food values and simple food tests. Calories. Vitamins. Food preservation. Deficiency diseases.

8. *Diseases*

Infection, parasitism, vectors, inoculation and vaccination. Housefly, as a vector, tuberculosis, cholera, typhoid, diarrhoea. Life history and control. Tapeworm: brief life cycle; Sanitation and meat inspection. Bacteria and viruses: two or three examples of diseases caused by these organisms.

Fungi: athlete's foot, thrush, ringworm.

9. *Soil*

Composition, Types—clay, sand, loam. Simple agricultural processes (e.g., liming, manuring, fertilisers and mechanical cultivation). Rotation of crops.

10. *Field Studies*

No specific study to be demanded, but a list of possible topics is included. The note books, collections, etc., resulting from the field study to be assessed by the school, and moderated by the Board.

11. *Scientists*

Credit to be given to the following, with very brief outlines of their work, whenever their discoveries are mentioned. Fleming—penicillin; Jenner—vaccination; Pasteur—sterilised milk; Harvey—blood; Salk—polio vaccine; Lister—antiseptics; Darwin and Wallace—evolution; Linnaeus—classification; Fabre—insects; Mendel—heredity.

Suggested Topics for Field Work

1. A tree and its inhabitants, with counts.
2. Succession on a bare patch, with counts.
3. A survey of garden pests, with counts.
4. Earthworms, counts including depths at different seasons.
5. Bird counts at different seasons.
6. Birds of a given habitat, e.g., school field, a pond, cliff houses.
7. Plants of a given habitat, comparing them with a differing habitat.
8. Plant and animal inhabitants of a rotten log or tree stump.
9. Climbing plants in a given habitat.
10. Animal tracks throughout the seasons.
11. Layers in a wood.
12. Seasonal changes of vegetation in a wood.
13. Comparison of hedgerows of different aspects.
14. Habitats of fungi.

15. Comparison of trampled and non-trampled field vegetation.
16. Comparison of old walls of different aspects.
17. Spider studies in the field.
18. Soil inhabitants, with counts, in a specific area.
19. Soil profiles.
20. Studies of seed and fruit dispersal in a given area.

CHEMISTRY (South)

(a) Papers I and II each of $1\frac{1}{2}$ hours duration 85%. (b) Teacher assessment 15%.

EXAMINATION NOTES

Each paper will be in two sections: each Section A (requiring about $\frac{1}{2}$ hour) will be made up of compulsory short answer questions demanding written or drawn answers and the two sections together will carry 35% of the total mark: each Section B (requiring about 1 hour) will contain 8 questions requiring detailed answers of which 4 are to be attempted and the two sections together will carry 50% of the total marks.

It is expected that a reasonably good candidate will be able to complete each paper in $1\frac{1}{2}$ hours, but an additional $\frac{1}{2}$ hour may be taken if required.

SYLLABUS NOTES

Although the syllabus is divided into the conventional subject headings, it is not intended to dictate the teachers' approach, nor the time in the course where a topic should be introduced. This will depend on the particular circumstances in each school.

In deciding the range of topics to be covered, the needs of pupils going on to apprenticeships and other training in applied Science have been borne in mind.

It is hoped that in the teaching of the subject every opportunity of doing practical work will be taken and attention drawn to applications to present-day life. Candidates will be expected to show by their answers that they have performed practical experiments illustrating the subject matter and that they are familiar with fundamental processes.

TEACHER ASSESSMENT

The subject teacher shall award up to 15% of marks for course work, practical work, hobbies, field work, projects, independent or group work.

Where applicable, a suitable record, i.e., a practical note book or folder which shows quite clearly the range of work covered, should be compiled by the pupil.

Indications of the work on which the Teacher Assessment will be based should be submitted by individual schools to the Board before the end of September of the current school year.

A mark list showing Teacher Assessment shall be forwarded by the subject teacher to the Board on or before a date prescribed. The pupil's record may be inspected in the school by the examiner and samples may be required for moderating.

<i>Syllabus</i>	<i>Notes</i>	<i>Application to Everyday Life</i>
Air, its chief gaseous constituents including oxygen, nitrogen, water vapour, carbon dioxide.	Brief mention of argon and neon, otherwise knowledge of rare gases not expected.	
Proportion of oxygen in air.	By alkaline pyrogallol.	
Oxygen, preparation and properties.	Any recognised method of preparation. The burning of carbon, sulphur, magnesium and iron.	Medical and industrial uses.
	Acidic and basic oxides.	
Water as a solvent.		Leaching of salts from soil.
Impurities and hardness.	Temporary and permanent hardness, methods of water softening ; by boiling and softening by soda, base exchange.	
Hydration, efflorescence and deliquescence.	As illustrated by magnesium sulphate, sodium carbonate and calcium chloride.	Soap manufacture, detergents.
Water as a compound.	Composition by volume and weight.	
Air content.	Life in water.	
Action of the metals sodium, calcium, magnesium and iron on water.	Conditions necessary for the rusting of iron. Methods of rust prevention.	
	Reversible reaction between steam and iron.	Commercial production of hydrogen from steam and iron.
Saturated and unsaturated solutions. Determination of solubility of solids.		
Hydrogen, preparation (from dilute acids), properties.		Meteorological balloons, hydrogeneration of margarine. Production of synthetic petrol. Welding, coal gas.
Oxidation and reduction.	Oxidation in terms of addition of oxygen or removal of hydrogen ; reduction as removal of oxygen or addition of hydrogen.	Extraction of iron.

Chalk (limestone and marble), quicklime, slaked lime.

Preparation and properties of carbon dioxide.

Carbonates and bicarbonates.

Carbon cycle.

Carbon.

Combustion of carbon and carbon containing substances.

Carbon monoxide.

Candle and Bunsen flame.

Coal—destructive distillation.

Elements.

Atoms.

Action of heat and acids.

Addition of carbon dioxide to air—combustion, respiration, fermentation and decay, by product of industrial process and removal by plants.

Allotropy: graphite, diamond, charcoal.

In (a) Plentiful (b) limited supplies of air. Energy changes in combustion should be discussed. Storing of energy as result of photosynthesis and its release in respiration and combustion should also be discussed.

Laboratory preparation not required but preparation by reduction of carbon dioxide should be discussed. Toxic effects.

Combustion of candle, production of carbon dioxide and water.

By-products, coal, gas, coke, coal tar and ammonia. Detailed description of gas works not required.

All substances formed from relatively few elements. Abundance of common elements.

Idea of atomic structure—nucleus, protons and neutrons—electrons in orbit—electron shell.

Cement and mortar.

Fire extinguishers, mineral waters, "dry ice", atomic reactor coolant, discharge tubes.

Use of washing soda and baking soda.

Industrial uses, grinding, graphite greases, gas absorption, pencils.

Coke fires, water gas and producer gas as fuels. Smokeless fuels.

Syllabus	Notes	Application to Everyday Life
Molecules.	Compounds and mixtures, physical and chemical changes. Law of Conservation of Mass, and the constancy of chemical composition (Definite Proportions). Valency—formulae — atomic weights — molecular weights, simple examples of empirical formulae.	
Molecular Movement.	Gay-Lussac's Law, Avogadro's Law. Density of gases—relative or vapour density and its relation to molecular weight. Gas pressure as evidence of this. Charles' and Boyle's Law. Formal statements of the laws mentioned above are not expected, but a knowledge of the relationships expressed by the laws is required. Solids, liquids and gaseous states—change of state—sublimation. Crystals and crystallisation with reference to the arrangement of atoms within molecules—crystal lattices.	
Mixtures and separation of components.	By crystallisation, precipitation, filtration, distillation (all with reference to molecular activity).	
Equivalent weights and the methods of their determination.	Experimentally by replacement of hydrogen and by addition or removal of oxygen. For copper the displacement with zinc should be discussed.	
Equivalent weights of acids and alkalis—normality.	Simple calculations based on equations.	
Acids, characteristics. General properties of acids.	Preparation of hydrochloric acid from common salt and nitric acid from potassium or sodium nitrate.	Acids in everyday use, acetic, tartaric, citric.

Nitric acid, reactions of nitric acid as
(a) an acid (b) an oxidising agent.

Preparation and properties of nitrous oxide,
nitric oxide and nitrogen.

Nitrates.

Nitrogen cycle.

Sulphur : its extraction and uses.

The allotropy of sulphur.

Sulphur Dioxide: preparation and properties.

Sulphurous acid.

Hydrogen sulphide.

Sulphuric acid, properties of concentrated
and dilute acid.

Hydrogen Chloride, preparation and pro-
perties.

Chlorine, preparation and properties.

Action of chlorine on water and alkalis.

Large scale preparation by oxidation of
ammonia should be discussed.

Limited to action of heat, solubility.

Soil fertilisers as source of nitrogen, nitrif-
ying bacteria.

Frasch process and surface method of
extraction required.

Crystalline, liquid and amorphous.

Action of hot concentrated sulphuric acid
on copper.

Preparation not required.

Outline of preparation by contact process,
no details of commercial plant required.

Laboratory preparation by oxidation of
hydrochloric acid using manganese dioxide.
Details of preparation by electrolysis of
brine.

Bleaching action of chlorine.
Preparation of Bleaching powder.

Explosives : organic compounds con-
taining nitro (NO_2) groups nitrates
(production).

Manufacture of sulphuric acid,
matches, chemicals such as carbon
disulphide, medicaments, Vulcanising
rubber.

Fumigant, preservative, use in re-
frigerators.

Bleaching agent.

Atmospheric erosion and pollution,
blackening of paint surfaces and silver.

Manufacture of bleaching powder—
sterilising water.

Syllabus

Notes

Application to Everyday Life

The Metallic Elements.

Physical and chemical differences between metallic and non-metallic elements.

Action of dilute mineral acids on magnesium, aluminium, zinc, iron, lead and copper.

Bases, Characteristics.

Preparation of bases, oxides of common metals, caustic soda. Indicators limited to litmus, methyl orange and phenolphthalein.

General properties of bases.

(a) by neutralisation, limited to sodium chloride and copper sulphate ;

(b) by the action of an acid on metal limited to magnesium sulphate ;

(c) double decomposition, limited to silver chloride and barium sulphate.

Salts, methods of preparation.

Acid salts as illustrated by sodium bisulphate.

Electrolysis.

Distinction between the terms electricity, electrolysis and electronics.

Ionisation of simple organic acids and salts.

Electrolysis of water as dilute solution of sulphuric acid.

with (a) carbon or platinum electrodes ;
(b) copper electrodes.

Electrolysis of copper sulphate.

Production of caustic soda with carbon electrodes.

Electrolysis of sodium chloride.

Laboratory preparation of pure nitrogen not required but differences between chemical and atmospheric nitrogen should be discussed.

Nitrogen, extraction of atmospheric nitrogen.

Laboratory preparation and details of its synthesis from nitrogen and hydrogen. (Haber Process).

Ammonia : preparation and properties.

Photography and medicine.

Copper refining, silver plating, nickel plating, production of aluminium. Kastner Kellner cell.

High reading thermometers.

Gas discharge tubes.

Manufacture of nitric acid.

Ammonium salts.	Action of heat on ammonium chloride.	Fertilisers.
Sodium.	Natural occurrence of sodium compounds. Production and uses of the hydroxide and the carbonate. Solvay process. Action of sodium hydroxide on aluminium and zinc.	Importance of rock salt as a raw material in the chemical industry.
Calcium.	Natural occurrence of calcium compounds.	Limestone as a raw material. Extraction of iron, in agriculture, water softening, manufacture of glass, mortar.
Copper.	Physical characteristics.	
Lead.	Particular reference should be made to its oxides and carbonate. Action of soft water on lead. Toxic nature of lead compounds.	Paint, lead-acid cells.
Iron.	Natural occurrence. Blast furnace and steel production.	Industrial.
Aluminium—abundance.	With particular reference to its production. No compounds except aluminium oxide.	
Magnesium.	Natural occurrence, magnesium oxide and sulphate.	Light alloys.
Alloys : steel, brass, type metal, duralumin, soft solder.	Reasons for the use of these alloys in preference to the metals from which they are made.	
Identification tests.	To include recognition of : (a) the gases : hydrogen, oxygen, carbon dioxide, chlorine, hydrogen chloride, sulphur dioxide, hydrogen sulphide, ammonia, water vapour ; (b) the acid radicals : nitrate, chloride, sulphate, carbonate ; (c) test for an ammonium compound. Formal analysis not required.	

All the undermentioned to be dealt with at introductory level only, no equations required.

<i>Syllabus</i>	<i>Notes</i>	<i>Application to Everyday Life</i>
Petrol and paraffin.	Outline of the petroleum and paraffin industry.	
Paraffin series.	Major productions of this industry. The linking of the carbon atom as illustrated by the paraffin series. Methane: distillation of coal. Action of organisms on cellulose.	
Ethane.	As an example of the linking of carbon atoms.	
Propane, Butane, Pentane.	As examples of linking and uses of fuels.	
Isomers.	Mention should be made of isobutane, isopentane, neopentane.	
Derivatives of the paraffins.	Chloroform, carbon tetrachloride and ethyl chloride. Methyl and ethyl alcohols, uses and manufacture.	
Fermentation and enzyme action.	Methylated spirit, its manufacture.	
Ethylene.	As examples of series illustrating the linking of the carbon atom.	
Acetylene.	Production and uses.	
Polymerisation.	Examples limited to Ethylene—Polyethylene. Acetylene—Benzene.	

GENERAL SCIENCES (South)

(a) Papers I and II each of $1\frac{1}{2}$ hours duration 85%. (b) Teacher assessment 15%.

EXAMINATION NOTES

Each paper will be in two sections: each Section A (requiring about $\frac{1}{2}$ hour) will be made up of compulsory short answer questions and the two sections together will carry 35% of the total mark: each Section B (requiring about 1 hour) will contain question requiring more detailed answers and the two sections together will carry 50% of the total marks, each section being divided into two parts so that candidates will not be able to attain one of the higher grades without evidence of familiarity with all parts of the syllabus.

It is expected that a reasonably good candidate will be able to complete each paper in $1\frac{1}{2}$ hours, but an additional $\frac{1}{2}$ hour may be taken if required.

TEACHER ASSESSMENT

The subject teacher shall award up to 15% of marks for course work, practical work, hobbies, field work, projects, independent or group work.

Where applicable, a suitable record, i.e., a practical note book or folder which shows quite clearly the range of work covered, should be compiled by the pupil.

Indications of the work on which the Teacher Assessment will be based should be submitted by individual schools to the Board before the end of September of the current school year.

A mark list showing Teacher Assessment shall be forwarded by the subject teacher to the Board on or before a date prescribed. The pupil's record may be inspected in the school by the examiner and samples may be required for moderating.

The syllabus which follows is intended for pupils who have pursued a course of General Science for five years. In drafting the syllabus it has been assumed that three forty-minute periods per week will have been given to it in the first three years, followed by a more intensive course of five forty-minute periods per week in the last two years.

Many topics of interest and importance have been omitted. Where teachers think that an omission is wrong, they should still teach the topic but they need not prepare candidates for an examination in it. The topics included represent those related ones which it is considered that candidates should know in order to meet life when they leave school for work or further education. It is expected that in the teaching of the subject every opportunity of doing practical work will be taken and attention drawn to applications to present-day life.

Although the syllabus is divided into the conventional subject headings, it is not intended to dictate the teachers approach nor the time in the course where a topic should be introduced. This will depend on the particular circumstances in each school. General Science will be considered as a single subject and as far as possible, evidence of this will be expected in the candidates answers. Most of the topics are dealt with qualitatively although some calculations involving simple arithmetic are required.

SYLLABUS

BIOLOGY

GENERAL

Characteristics of living organisms.

Feeding, breathing, movement, irritability, growth, and reproduction, as exemplified by the amoeba or paramoecium and a cell of *spirogyra*.

The essential features of living cells.

Structure limited to endoplasm and ectoplasm, and nucleus, in the case of animal cells. Cell wall, protoplasm, chloroplasts and nucleus in the case of plants.

Cells as units of higher organisms.

Specialisation, e.g., nerve cells, skin cells. Plants and animals compared.

The interdependence of plant and animal life.

With special reference to the inter-relation of life in a pond or aquaria.

The chemical constituents of living organisms.

Limited to water content, carbon and nitrogenous compounds.

Elements essential for plants.

Limited to calcium, phosphorus, potassium, sodium sulphur, nitrogen and iron.

PLANTS

Structure of a plant .

Roots, stem, leaf, seed. Structures as seen with a low power microscope or hand lens.

Germination and growth.

The candidates will be expected to have practical observation of this. Conditions necessary required.

The life cycle of a named flowering plant.

To show structure of flower, pollination, and fertilisation. Example to be chosen should be one within the candidate's experience.

Formation of fruits and seeds and their dispersal.

Only common examples are expected.

Vegetative reproduction.

Examples limited to the potato, strawberry and cuttings of woody shrubs.

Transport of essential substances.

Osmosis, diffusion and transpiration.

Photosynthesis.

Formation of starch using water, carbon dioxide, chlorophyll, Gas exchange, tissue respiration, energy release. Starch tests required.

The carbon cycle.

Food storage in plants.

Limited to roots, e.g., carrots, bulbs, e.g., onion, seeds, e.g., wheat, peas and beans.

The economic importance of plants.

Food, fibres, building materials, drugs, dyes.

Plant response (irritability).

Limited to geotropisms, phototropisms and hydrotropisms.

ANIMALS

Classification

Invertebrates.

Insects, spiders, earthworm, hydra and amoeba. Life history and mode of life of housefly and methods of control.

Vertebrates.

Fish, amphibia, reptiles, birds and mammals. External features, structure and life cycle of one named representative of each phylum to be known.

Man as a Mammal

Man.

The skeleton.

No details of smaller bones, e.g., hand, required. Functions—shape, protection, movement.

Movement of the limbs.

Joints limited to ball and socket, and hinged.

Muscles and leverage.

Muscles in relation to movement only.

The alimentary canal, digestion and absorption of food.

Starting with mouth. Details limited as follows: Teeth—structure and care. Salivary glands and functions of saliva. Stomach and functions of gastric juices. Duodenum, pancreas, bile duct, functions of bile. Small intestine, villi and liver. Function of large intestine.

Blood circulation.

Composition limited to plasma, red corpuscles, white corpuscles. Their functions. Blood groups, four main types only.

The heart.

No details of valves required. Action of heart as a pump.

Arteries, veins, capillaries.

Relation to each other and relative positions within the body. Structure and functions.

Respiration.

Organs of respiration, position, structure and function.

Mechanism of breathing.

Action of diaphragm and ribs only. Difference between inspired and expired air.

Excretion.

Position and function of the kidneys.

The skin.

Structure and function. Temperature control.

Nervous system.

General plan. Brain, no details, spinal cord, reflex and voluntary actions.

Sense Organs.

Ear—to include the ear drum and linkage to the cochlea. Reproduction of diagram not required. Eye—structure to include cornea, aqueous humour, iris, lens, ciliary muscles, vitreous humour, retina, optic nerve. Other senses—skin, taste, touch and smell.

Reproduction

- The distinctive features of asexual and sexual reproduction.
As illustrated by simple animals. The advantages of each type of reproduction required.
- Reproduction in a named mammal.
Structure and position of glands, ovaries, testes and ducts. Mating, fertilisation. The placenta. Birth and feeding baby.

Foods and Nutrition

- Food chains. Food constituents—carbohydrates, fats, proteins, water, mineral salts, vitamins.
Candidates will be expected to have performed elementary tests for starch, reducing sugars, fats and proteins. Vitamins will be limited to A, B, C and D.
- Deficiency diseases.
Associated with lack of the above foods.
- Balanced diets.
A knowledge of the food value of a meal is required.
- Calorific value of food.
Limited to intake required by different occupations, activities and conditions.
- Food preservation.
Canning, drying and freezing required.
- Milk.
As a complete food. Its constituents.
- Food storage in plants.
See PLANTS.

Micro-organisms

- Beneficial activities.
Their importance in the decay of organic matter. The circulation of nitrogen in nature.
- Yeast.
Its importance and action in the baking of bread and alcoholic fermentation.
- Harmful activities.
Spoilage of food and decay. Its prevention.
- Disease-producing organisms.
Parasites, protozoan, bacteria, viruses—their relative sizes and an understanding of their rate of reproduction. Candidates should know a disease produced by each of the above.
- Modes of infection.
By personal contact, unclean food, water and air-borne and insect carriers.
- Prevention of infection.
Public health, clean water, refuse disposal, clean food, pest control. Use of antiseptics and disinfectants.
- Body's defences against diseases.
Action of the skin, white corpuscles and anti-bodies. (See Man as a mammal.)
- Immunisation and vaccination.
Active and passive immunity.

CHEMISTRY

Basic ideas of the atom.

The atom to be treated as consisting of a nucleus of neutrons and protons and outer electrons.

Atomic weights (mean).

Limited to the comparison of the mass of an atom to the mass of a hydrogen atom. Hydrogen to be taken as 1 and oxygen as 16. Knowledge of actual atomic weights not expected.

Elements.

All substances from relatively few elements. Relative abundance of common elements. Mention of radio-active elements is also required.

Compounds.

The constancy of chemical composition verification not required. An understanding of the Law of Conservation of Mass is required but not formal definition.

Mixtures and the separation of constituents.

Familiarity with the elementary techniques of crystallisation, distillation, filtration and precipitation is required.

Molecules and molecular movement, and molecular attraction.

As an aid to the interpretation of the following phenomena : fluid pressure, thermal expansion, change of state, diffusion and osmosis. Application of the above. As an explanation of surface tension, capillarity (application to plants and water animals) and action of detergents. Chemical and physical change. Differences between chemical and physical changes. Examples to be taken from changes with which the candidates are familiar.

Solutions and solubility.

Solvents other than water. Effects of temperature on solubility. Suspensions, emulsions.

Chemical reactions.

Decomposition, synthesis, displacement, electrolysis. Word equations will be accepted.

Acids.

Occurrences of acetic, carbonic, citric and hydrochloric. Industrial preparation of sulphuric and acetic (vinegars).

Common properties of acids.

Sour taste—action on blue litmus and methyl orange solution—action on carbonates.

Uses and effects of acids.

Commercial, industrial and natural uses of acids mentioned above. Corrosive effects of mineral acids and carbonic acid.

Alkalis.

Caustic soda, lime water, ammonium hydroxide. Laboratory preparation of lime water.

Common properties of alkalis.

Soapy feel—action on pink litmus and phenolphthalein.

Uses and effects.

The emulsification of fats. Corrosive effect of caustic soda.

Neutralisation and formation of salts.

As exemplified by action of sodium hydroxide and hydrochloric acid or sulphuric acid. Methods of preparation.

Common substances

Air as a material substance.

Qualitative experiments to illustrate that air has mass and volume.

Chemistry of air.

Main constituents and proportions by volume (relative proportions of oxygen and nitrogen should be known. Importance of oxygen, carbon dioxide, water vapour, and nitrogen to living organisms (see BIOLOGY section).

Breathing.

Rates of breathing before and after exercise. Differences between inspired and expired air (qualitative experiments only required).

Oxygen.

Laboratory and industrial preparation of oxygen. Some properties of oxygen, glowing splint test, supporter of combustion, solubility in water (see BIOLOGY section).

Uses of oxygen.

Oxygen tents, aqua lung, flying, welding and cutting metals, in the extraction of metals, furnaces.

Burning.

Requirements for burning. Control of fire. Principle of oxygen limitation. Cooling below flash point. Fire extinguishers.

Rusting.

As an example of slow combustion. Conditions necessary for rusting (1) air, (2) water. Usual methods of rust prevention.

Carbon dioxide

Its occurrence and formation in the combustion of carbon fuels, foods and by fermentation. Energy release. Its laboratory preparation by heat and acid on carbonates.

Properties.

Action on lime water, density, non-supporter of combustion, solubility in water (importance to aquatic plants), and the formation of carbonic acid and its effects.

Uses of carbon dioxide.

In nature (see Photosynthesis). Dry ice, fire extinguishers, fruit storage, coolant and heat exchanger in nuclear power stations, breathing stimulant, baking and fermentation.

Water

Water of living organisms (see BIOLOGY section).

The water cycle.

Evaporation, condensation, rainfall, filtration. Production of pure water by distillation.

Water as a solvent.

Importance of dissolved substances to life. Effect of temperature on solubility.

Hardness of water.

Disadvantages—furring of boilers, scum with soap. Methods of softening.

Surface Tension.

Everyday examples—water boatmen, soap bubbles and films, meniscus, surface breathing larvae. Its reduction by heating and detergents.

Capillarity.

Blotting paper, wicks, dampcourses, paint brushes, soil.

Composition of water.

Production on burning hydrocarbons and food in oxygen, e.g., coal gas in air, car exhausts. Electrolysis of impure water.

Hydrogen

- Preparation by action of calcium on water. Properties and uses.
- Combustion of hydrogen.
- Formation of water in combustion of fuels, e.g., coal gas.

Carbon

- Allotropy—diamond, graphite, charcoal, coke.
- Occurrence and industrial uses. As a fuel and reducing agent in smelting.
- Coal—the product of its destructive distillation.
- Its formation and uses. Detailed description of gas works not required. Block diagrams only required and products limited to ammoniacal liquor, coal gas, coke and tar. General uses required.
- Carbon monoxide.
- Its occurrence and poisonous effect.

Calcium Compounds

- Calcium Carbonate.
- Its formation, occurrence, uses and properties. Its main use as a raw material in the building industry to be stressed.
- Calcium oxide and calcium hydroxide.
- Their preparation, uses and properties.

Metals

- Differences between metals and non-metals.
- Metals limited to iron, zinc, copper, aluminium, lead, tin and sodium.
- The physical properties and uses of metals.
- Limited to steel (including stainless steel), copper, aluminium, and alloys brass and duralumin.
- Chemistry of metals.
- Action of above on acids. Action of moist air on them. Oxidation and reduction of metals.

PHYSICS

Forces

- Force.
- As a push or pull producing motion or change of motion.
- Measurement of a force.
- By a spring balance in lbs. weight or gms. weight. Distinction between mass and weight to be known.
- Hooke's Law.
- Formal definition not required but candidates must have practical experience of it with spiral springs and rubber.
- Gravity.
- Weight as a force due to gravity.
- Friction.
- As a force tending to oppose motion. Use of friction.
- Reducing friction.
- By lubrication, roller and ball bearings.
- Inertia.
- Demonstrated by elementary experiments.
- Principle of moments.
- Applied to levers and simply supported beams. All forces at right angles to beams.
- Equilibrium and centre of gravity.
- Centre of gravity in one plane only.. Everyday applications required.

Pressure

Atmospheric Pressure.

Cause of pressure. Magnitude of atmospheric pressure (14.7 lbs./sq. in.).

Measuring atmospheric pressure.

Simple mercury barometer. (30 in. mercury, 34 ft. water). Aneroid barometer (details of linkage not required). Tyre gauge.

Applications of atmospheric pressure.

Cycle pump and valve, syringe, suction discs.

Pressure in fluids.

Link with atmospheric and water pressure. Variations of pressure with depth. Use of manometer. Pressure equal in all directions.

Applications.

Dams, divers. Principle of hydraulic press (narrow tube joined to wide tube). $\text{Pressure} = \text{Thrust} \div \text{Area}$. Hydraulic brakes and presses.

Compressibility of fluids.

Gases (suggest air only). "Pressure inversely proportional to volume" but formal statement of Boyle's Law and problems thereon will not be examined. Great force required to compress solids and liquids.

Flotation and density

Density.

Direct measurement and measuring cylinder methods only. Comparison of densities of common materials, e.g., cork, aluminium, iron, glass, oil, petrol, etc.

Relative density.

Idea of comparing density of substance with density of water, to lead on to flotation.

Flotation.

Resultant upthrust. The Principle of Flotation (no formal statement of Archimedes Principle required). Floating in fresh and salt water, loading of ships. Submarines, balloons. Use of hydrometer.

Machines

Principle of work.

Machines make work easy but not less.

Inclined planes, levers, pulleys and gears.

Single string pulley systems only. Pulleys and gears treated as special forms of levers (see Skeleton).

Mechanical Advantage. Velocity ratio. Efficiency, work and power.

All treated as applied to the above machines. Units limited to ft.-lbs. and horse-power (see Watts). Numerical examples and calculations to be of an elementary nature.

Energy

The different forms of energy.

Atomic, chemical, electrical, heat, mechanical and radiant (potential and kinetic).

Transformation and conservation.

Qualitative examples only.

Four-stroke internal combustion engine.

Description using block diagrams only.

Electric motor.

See Electricity.

Astronomy and Solar System

Sun.

As a star. Prime source of energy.

Planets.

Names and relative sizes. Mean distance of orbits from sun.

Satellites.

Existence of natural satellites. Relative distance of moon from Earth compared to distance of earth from sun.

Day and night. Seasons.

The inclination of the earth's axis. The variation of night and day.

Constellations.

The Plough, Orion, Cassiopeia to be identified. The nature of a galaxy.

Astronomical distance.

The meaning of light-years. Velocity of light.

Radiant Energy

Sources of radiation.

Sun, lamps, fires, radio-active materials.

Rectilinear propagation of light and heat.

Shadows, day and night. Effect of shadows on woodland life and mountain life.

Inverse square law.

No definition but effects of distance and magnitude of course to be known. Treated qualitatively.

Radiation.

Conversion, absorption and radiation by different types of surfaces. Its importance to soil, clothing and housing.

Reflection at plane surfaces

Laws of reflection.

Light ray methods preferred to pin method. Position and nature of image.

Reflection at curved surfaces

Concave mirrors.

Position, size and nature of image to be found by graphical or practical methods only. In the case of heat, focal point only.

Convex mirrors.

Images seen in a convex mirror to be compared with those seen in concave mirrors. Uses of curved mirrors.

Refraction.

Illustrated by experiments. No formal statement of laws but explanation of refraction as caused by change of velocity with change of medium.

Total internal reflection.

Applications to include the use of 45, 45, 90 prism. Mirages on roads.

Lenses.

Focal length of converging lenses only. Graphical methods only for determining the size, position and nature of the image.

Convex and concave lenses.

Images seen compared and contrasted. Uses.

The eye.

See BIOLOGY section. Long and short sight and their correction.

The camera.

The image formed by a single movable lens with iris.

Other uses.

The simple magnifier. The function of the objective lens in the projector.

Colour

Dispersion of white light.

The equiangular prism. The rainbow.

Mixing coloured lights.

Light ray methods should be used. Primary, secondary and complementary colours. Photography.

The mixing of pigments.

The Spectrum

The electro-magnetic spectrum.

The position of X-rays, ultra-violet, the visible spectrum, infra-red and radio waves in the full electro-magnetic spectrum should be indicated.

Waves

Longitudinal and transverse waves.

Illustrated by analogy (sound and light).

Wavelength, frequency and velocity.

Their relationship should be known.

Speed of light and sound.

This is expected and the comparison should be known. Mach numbers not required.

Amplitude and Doppler effect.

With reference to sound and its application to light.

Transmission of energy.

Transference of heat

Conduction, convection, radiation.

Qualitative treatment only. Conductors and insulators and their uses including the Davy lamp, clothing and house insulation. The household hot water system. The vacuum flask. (See radiant energy.)

Thermal expansion

Solid, liquid and gas.

Everyday applications to include unequal expansion of solids. Effects of temperature on pressure and volume of gases are required. Qualitative treatment. No definition of gas laws.

The anomalous expansion of water.

Hope's experiment not required. Consequences required. Importance to aquatic life.

Thermometers.

Mercury and alcohol. The clinical thermometer.

Fahrenheit and Centigrade (Celsius) scales.

Conversion of scales.

Calorimetry

Calorie and kilo-calorie. B.T.U. and Therm. Specific heat.

An understanding of these units required. Calculations will be limited to time taken to heat substances of the same mass to same temperature.

Change of state and latent heat.

Elementary account using Kinetic theory (see Molecules). Qualitative treatment only required.

Atmospheric humidity.

A qualitative treatment of atmospheric humidity, dew and mist. Conditions necessary for evaporation or drying.

Cooling by evaporation.

Uses in refrigeration. Wet and dry bulb thermometer. (See BIOLOGY.)

Sound

Produced by vibration.

Illustrated by experiments.

Transmission.

An experiment to show the need for a material medium is expected.

Velocity.

Elementary determination of its velocity in air.

Echoes.

Uses.

Frequency and pitch.

The relation between frequency, length and tension in a stringed instrument should be known.

Amplitude and loudness.

Magnetism

Elementary properties of magnets and magnetic materials.

Some understanding of the molecular theory of magnetism required. Making and spoiling magnets. Magnetic induction.

Temporary and permanent magnets.

Magnetic fields.

Plotted using a compass and iron filings. Fields in one plane required of the following: single bar magnet between like poles and between unlike poles.

Electricity

Electrons.

Understanding of electron flow.

Electrical charges.

Elementary experiments illustrating the existence of charges.

Like charges repel, unlike charges attract.

Conductors and insulators.

The choice of suitable insulators according to potential.

The simple circuit.

The necessity for a complete circuit. Switches.

Resistance and factors governing the resistance of a conductor.

A formal statement of resistivity is not required but candidates should have a practical understanding of the effect of length, cross-section and material.

Potential Difference, current, resistance and their relationship.

Units—volts, ampere and ohms. A formal definition of Ohm's

Law is not required but practical experience of the relationship is.

Meters.

Correct use of ammeter and voltmeter.

Resistances in series and parallel.

Compared and contrasted. Qualitatively only.

Chemical effect

Electrolysis.

The electrolysis of copper sulphate with copper electrodes. (See CHEMISTRY). Products of electrolysis should be known, but further details not needed.

Electroplating.

As illustrated by copper plating. Uses in industry. Silver plating and chromium plating.

Cells

The simple cell and the Leclanché "dry" cell.

Local action and polarisation. No chemical details.

Secondary cell, lead-acid.

Practical knowledge of the care and use of the cell.

Heating effect

Practical application.

Lamps, fires and fuses.

The watt and its relation to horse-power.

Watts = volts x amperes should be known. Danger of overloading circuits.

The kilo-watt hour and cost of electricity.

Reference should be made to the power needs of domestic equipment.

Magnetic effect

The electro-magnet.

Its uses in the relay and electric bell.

The electric motor.

Details of simple two-pole motor required. Reference to the large-scale use of motors and reasons for it.

Principle of moving coil meter.

Structural details not required. The moving coil loudspeaker.

Electro-magnet induction.

Elementary experiments which demonstrate the magnitude and direction of the current.

A simple alternator.

Cycle dynamo or single coil alternator.

Alternating current.

Qualitatively compared with direct current.

Transformers.

The principles and applications. The effect of turns ratio will be expected but no calculations will be set.

The Grid System.

Single phase only. Advantages of high tension.

Household wiring.

Electrical safety to be stressed, earthing, wiring of plugs, etc.

HUMAN BIOLOGY (South)

(a) Papers I and II each of $1\frac{1}{2}$ hours duration 85%. (b) Teacher assessment 15%.

EXAMINATION NOTES

Each paper will be in two sections: each Section A (requiring about $\frac{1}{2}$ hour) will be made up of compulsory short answer questions and the two sections together will carry 35% of the total mark: each Section B (requiring about 1 hour) will contain 8 questions requiring detailed answers of which 4 are to be attempted, and the two Sections together will carry 50% of the total marks.

It is expected that a reasonably good candidate will be able to complete each paper in $1\frac{1}{2}$ hours, but an additional $\frac{1}{2}$ hour may be taken if required.

SYLLABUS NOTES

Although the syllabus is divided into the conventional subject headings, it is not intended to dictate the teacher's approach, nor the time in the course where a topic should be introduced. This will depend on the particular circumstances in each school.

In deciding which topics must be retained, the needs of pupils going on to further training after leaving school have been borne in mind.

The syllabus as under indicates that individual practical work and class demonstrations on the anatomy of mammals and microscopical preparations (tissues and micro-organisms) will have been carried out. Stress should be laid on the relation of structure to function.

TEACHER ASSESSMENT

The subject teacher shall award up to 15% of marks for course work, practical work, projects, field work, independent or group work.

Where applicable, a suitable record, i.e., a practical note book or folder which shows quite clearly the range of work covered, should be compiled by the pupil.

Indications of the work on which the Teacher Assessment will be based should be submitted by individual schools to the Board before the end of September of the current school year.

A mark list showing the Teacher Assessment will be forwarded by the subject teacher to the Board on or before a date prescribed. The pupil's record may be inspected in the school by the examiner and samples may be required for moderating.

SYLLABUS

1. *Man*

As an example of a living being. Man compared with other mammals (upright stance, large brain, colour vision, finger and thumb in opposition). General plan of the human body, position of organs in relation to each other. (Note : some teachers may feel it helpful to dissect a small mammal to help with the explanation of the following systems of the body).

2. *Skeleton*

Structure—Axial and appendicular skeleton (omit details of bones in hand and foot). Functions—shape, support, protection, movement, red blood cells formation. Composition—bone and cartilage, growth and nourishment of bone. Joints—ball and socket, hinge, gliding, pivot, and immovable joints.

3. *Circulation*

Structure and function of arteries, veins and capillaries. General plan of the circulatory system. The heart—structure and function, blood pressure, systolic and diastolic pulse. Action of heart as a pump. Examination of sheep's heart. The blood—composition (plasma, red and white corpuscles, platelets), blood groups and Rhesus factor, blood transfusion. Functions of blood. Lymph—lymphatics—function.

4. *Muscles*

Muscles in relation to movement. Muscles involved in posture, walking and grasping. The importance of exercise and rest, muscle fatigue. Structure and functions of cardiac, striated (voluntary) and unstriated (involuntary) muscles.

5. *Nutrition*

Nature and use of food. Basic dietary needs of human body. Constituents of food—fats, proteins, carbohydrates, water, mineral salts and vitamins. Food tests. Balanced diet, calorific value of foods and needs during adolescence, pregnancy and for manual work. Milk as a food.

6. *Digestion*

The need for digestion. Alimentary canal—outline. Milk and adult teeth. Types of teeth. Structure and care of teeth. Action of tongue. Epiglottis. Digestive glands—saliva, gastric juice, bile, pancreatic juice, intestinal juices. Absorption through the small intestine. Function of the large intestine. Muscular action of alimentary canal—peristalsis, segmentation, pendular waves. Pyloric sphincter and anal sphincter. Practical work on the action of ptyalin on starch, pepsin on proteins and emulsification of fats.

7. *Respiration*

Organs of respiration—position, structure and functions of lungs, trachea, bronchi, bronchioli and alveoli. Mechanism of respiration. Tissue respiration and release of energy. Air—difference between inspired and expired air. Breathing—importance of breathing through the nose. Ventilation—importance at all times, especially at night. Need for fresh air and sunlight. Overcrowding and health.

8. *Senses*

Sight—structure of eye; myopia, hypermetropia, and their correction. Hearing—structure and functions of ear; semi-circular canals and cochlea. Smell. Taste. The skin as a sense organ.

9. *Nervous System*

The central nervous system. Elementary knowledge of structure and functions of brain and spinal cord. Reflex actions. Conditioned reflex and habits. Voluntary actions. Sensory and motor neurons.

10. *Endocrine System*

Elementary treatment. Pituitary, thyroid, adrenal, gonads and pancreas.

11. *Reproduction*

Structure of male and female systems. Elementary treatment of production of sex cells. Menstruation. Fertilisation, and development of fertilised ovum. Outline of growth of foetus—nutrition. Determination of sex. Twins. Simple facts of inheritance—recessive and dominant characters.

12. *Excretion*

Lungs, skin, kidneys. Structure and functions of skin. Sweat in relation to body temperature. Importance of clean skin. Elementary knowledge of structure and function of kidneys and ureters. Composition of urine. The bladder. Maintenance of water balance.

13. *Tissues*

Areolar, adipose, blood, cartilage, bone, muscle, nerves (with examination of microscopical preparations). Epidermal tissues and their products—keratin (hair and nails).

14. *Living Conditions*

Air and ventilation. Heating and lighting. Water supply. Contamination of water by pathogenic bacteria (typhoid, dysentery and cholera). Sewage pollution. Sanitation—drainage and sewage disposal treated simply. Refuse disposal. Personal hygiene. Care of teeth, skin, bowels, diet, exercise, sleep. Care of hair and nails. Lice, fleas, ringworm, athlete's foot. Importance of suitable clothing and footwear. Disease—infection and disinfection. General nature of bacteria. The housefly as a vector of many diseases. Spread of communicable disease and methods of destroying bacteria. Immunisation and vaccination. Production of clean foods—general principles of preservation and inspection—especially meat and milk. Food poisoning.

PHYSICS (South)

(a) Papers I and II each of $1\frac{1}{2}$ hours duration 85%. (b) Teacher assessment 15%.

EXAMINATION NOTES

Each paper will be in two sections: each Section A (requiring about $\frac{1}{2}$ hour) will be made up of compulsory short answer questions and the two sections together will carry 35% of the total marks: Section B in Paper I (requiring about 1 hour) will contain 8 questions requiring detailed answers of which 4 are to be attempted.

Section B in Paper II (also requiring about 1 hour) will be in two parts: PART 1 will contain 2 questions on each of the additional topics; at least one question to be attempted.

PART 2 will contain 6 general questions from the main syllabus requiring detailed answers.

The two Sections B together will carry 50% of the total marks.

It is expected that a reasonably good candidate will be able to complete each paper in $1\frac{1}{2}$ hours, but an additional $\frac{1}{2}$ hour may be taken if required.

SYLLABUS NOTES

In order to allow the introduction of some of the Physics to the 20th century, many topics usually found in syllabuses at this stage have been omitted. Where teachers think that an omission is wrong, they should still teach the topic but need not prepare candidates for an examination in it.

Although the syllabus is divided into the conventional subject headings, it is not intended to dictate the teacher's approach, nor the time in the course where a topic should be introduced. This will depend on the particular circumstances in each school.

In deciding which topics must be retained, the needs of pupils going on to apprenticeships and other training in Applied Science have been borne in mind.

It is hoped that in the teaching of the subject every opportunity of doing practical work will be taken and attention drawn to applications to present day life. In general, the values of constants will be given but importance is attached to pupils knowing the approximate magnitude of physical quantities.

In addition to the main syllabus, four topics are outlined: (1) Electronics, (2) Nuclear energy, (3) Astronomy, (4) Heat engines.

Candidates will be required to answer questions on one of these four topics.

TEACHER ASSESSMENT

The subject teacher shall award up to 15% of marks for course work, practical work, projects, field work, hobbies, independent or group work.

Where applicable, a suitable record, i.e., a practical note book or folder which shows quite clearly the range of work covered, should be compiled by the pupil.

Indications of the work on which the Teacher Assessment will be based should be submitted by individual schools to the Board before the end of September of the current school year.

A mark list showing the Teacher Assessment will be forwarded by the subject teacher to the Board on or before a date prescribed. The pupil's record may be inspected in the school by the examiner and samples may be required for moderating.

SYLLABUS

1. *Properties of Matter*

(a) *Basic ideas of the atom*

The atom being treated as consisting of a nucleus of neutrons and protons, and outer electrons.

(b) *Mass and density*

Both F.P.S. and C.G.S. units are required. Calculations on "Mass = Volume x density" are required but methods of determination of density are not required. An understanding of the relative density of common solids, liquids and gases is required.

(c) *Speed, velocity and uniform acceleration*

Equations of motion of a particle moving with uniform acceleration are not required. Calculations on relations between speed, distance and time may be asked.

(d) *Force and weight*

The distinction between Mass and Weight must be known. No formal statement of Newton's laws is expected but an understanding of the equation "Force = Mass x acceleration". F.P.S. units only.

(e) *Friction*

Qualitative treatment only.

(f) *Scalar quantities*

Examples and addition.

(g) *Vector quantities*

Their addition by parallelogram of forces and velocities only.

(h) *Work, Power and Energy*

The general principles of machines, including mechanical advantage, velocity ratio and efficiency.

As illustrated by the lever, inclined plane, screw, single string pulley system and hydraulic press. Units limited to foot-pounds and horse-power. The approximate numerical relationship between horse-power and watt should be known. Transformation and conservation of energy.

(i) *Moments*

The principle of moments.

Applied to levers, simply supported beams and wheel and axle.

(j) *Centre of Gravity*

Qualitative treatment only. Centre of gravity and its relation to stability. Stable, unstable and neutral equilibrium are included.

(k) *Hooke's Law*

Experiments with spiral springs and with rubber. Modulus of elasticity is not required.

(l) *Density of air*

Pressure. Atmospheric pressure. Simple mercury and aneroid barometers. Altimeter, syringe, cycle pump and siphon.

Details of linkage of aneroid barometers are not required. In the case of the siphon, conditions for use without explanation will be accepted.

(m) *Boyle's Law*

A formal statement is not expected, but the ability to use the relationship between pressure and volume is required.

2. Heat

(a) Sources of heat

The sun as a primary source. Chemical, electrical and mechanical secondary sources to be included.

(b) Transfer of heat

Conduction, convection and radiation.

Qualitative treatment only. Good conductors and insulators and their uses including the principle of the Davy lamp, insulating clothing and house insulation. The household hot water system. The vacuum flask.

(c) Measurement of temperature

The simple liquid in glass thermometer. Fahrenheit and Centigrade scales. Conversion of scales.

The only special thermometer required is the clinical thermometer.

(d) Effects of heat

Expansion of solids, liquids and gases.

Everyday applications to include unequal expansion of solids. Very simple calculations on coefficient of linear expansion. Effects of temperature on pressure and volume of a gas are required. Hope's experiment is not required.

The anomalous expansion of water. Measurement of heat. The calorie, Btu., and Therm. Specific heat and thermal capacity. Calculations limited to the change of temperature of a single substance.

Change of state.

Simple account of change using Kinetic Theory. Idea of absolute zero.

Latent heat—fusion and vaporisation.

Qualitative questions only.

(e) Heat as a form of energy

Examples of its conversion to mechanical energy. The 4-stroke internal combustion engine. The refrigerator.

Described using block diagrams.

3. Light

(a) Sources of light

Natural and artificial sources.

Sun, filament lamp and fluorescent tube. Variation of illumination with distance and brightness of source, very simply treated.

Light as a form of energy.

Conversion of light to electrical energy as in the exposure meter.

(b) Properties of light

Travel in straight lines, shadows. Speed of light.

Pinhole camera to be included but no questions will be set on eclipses.

(c) Laws of reflection

Reflection at plane surfaces. Position and nature of image. Effect of rotating mirror.

Experiments with the raybox will be preferred to pin methods.

(d) Reflection at curved surfaces

Spherical mirrors.

Position, size and nature of image to be found by graphical methods only. Common applications to include the mirror periscope, the driving mirror, the shaving mirror and the comparison of the field of view of plane mirrors with spherical mirrors.

(e) *Refraction*

No formal statement of laws but explanation of refraction as caused by change of velocity with change of medium.

Total internal reflection. Image formed by converging lens.

Applications to include the use of a 90° prism. Position, size and nature of image to be found by graphical methods only.

The simple magnifier. The function of the objective lens in the projector. The camera.

The image being formed by a single movable lens with an iris diaphragm.

The eye as a simple optical instrument compared with the camera.

Diagram of the eye should show cornea, aqueous and vitreous humour, iris, crystalline lens, ciliary muscles and retina.

(f) *The Electro-magnetic spectrum*

The formation of a pure spectrum.

The position of X-rays, ultra violet, the visible spectrum, infra red and radio waves in the full electro-magnetic spectrum should be indicated.

The conversion of ultra violet to visible light by fluorescent substances.

(g) *Colour*

The mixing of coloured lights. Primary, secondary and complementary colours. The mixing of pigments.

4. *Sound*

(a) *Production by vibrating sources*

Illustrated by experiments. An experiment to show the need for a material medium is expected.

Transmission.

(b) *Velocity*

Simple experimental determination of velocity in air and the comparison between the velocities air, water and a solid are required.

Frequency and pitch. Wavelength. Amplitude and loudness.

The relationship between frequency, length and tension in a stringed instrument should be known.

(c) *Reflection of sound and echoes*

(d) *The ear*

Treatment to include only the ear drums and linkage to the inner ear. The ability to reproduce diagrams is not required.

5. *Magnetism*

(a) *Elementary properties* of magnets and magnetic materials.

Methods of making and spoiling magnets. Magnetic induction. Modern magnetic alloys should be included.

(b) *Magnetic field*

The understanding and the plotting of lines of force.

The field of a single bar magnet. The field between like poles and unlike poles. Qualitative treatment of neutral point.

(c) *The Earth's magnetism*

Simple treatment, to include Declination and Dip. (Details of compass construction will not be required.)

6. *Electricity*

(a) *Primary cells*

The simple cell and the Leclanché dry cell.

A knowledge of local action and polarisation and their prevention in the dry cell will be expected. Details of the chemical action will not be required. (From 1967 a modern cell, e.g., the Mallory Cell, will be examined.)

- (b) *Secondary cells*
The lead-acid cell.
No details of reactions are required, but a practical knowledge of the care and use of the cell will be expected.
- (c) *Conductors and insulators*
The choice of suitable insulators according to potential.
- (d) *The simple circuit*
The correct use of the ammeter and voltmeter in the circuit.
Resistance and the factors governing the resistance of a conductor.
A formal statement of resistivity is not required but the pupil should have a practical understanding of the effect of length, cross-section and type of material.
- (e) *Electrical units*
The volt, the ampere and the ohm and the relationship between them.
A formal definition of Ohm's law is not required but pupils should have practical experience of the truth of the relationship.
- (f) *Resistance in series and in parallel*
No more than two resistances in parallel will be required.
- (g) *Heating effect of a current*
The Watt and its relation to horse-power.
Practical applications: lamps, electric fires and fuses.
The kilowatt hour and the cost of electricity.
Reference should be made to the power needs of domestic equipment.
- (h) *Magnetic effect*
The electro magnet. The relay and the electric bell.
The fields of single conductors and flat coils are not required.
- (i) *Chemical effect*
Qualitative treatment of the electrolysis of acidulated water and of copper sulphate solution using copper electrodes.
The products of electrolysis should be known, but details of ion transport and discharge will not be expected.
Electroplating.
Illustrated by copper plating.
- (j) *Force on a current in a magnetic field*
The simple two-pole motor.
Application of Fleming's left-hand rule.
The principle of the moving coil meter.
Structural details of the moving coil meter are not required.
The moving coil loud speaker. The deflection of an electron beam in a cathode ray tube.
Reference to a television set.
- (k) *Electro-magnetic induction*
Elementary experiments which demonstrate the factors affecting the magnitude and direction of the induced electro-motive force.
Application of the right-hand rule. A formal statement of the laws is not required.
The cycle dynamo and the single coil alternator. Coil ignition in the internal combustion engine. The moving coil microphone and the playback head of a tape recorder.
- (l) *Alternating current*
The nature of an electro-motive force generated by a single coil rotating in a magnetic field.
- (m) *Transformers*
Principles and applications of transformers.
The effect of turns ratio will be expected. In the examples set, 100% efficiency will be assumed.

- (n) *Distribution of electrical energy*
The Grid System.
Single phase only. The advantages of high voltage transmission should be included.
- (o) *Household electricity*
Distribution in the house. The correct placing of switches and fuses. Safety factors.
No particular wiring system will be insisted upon but the system chosen should demonstrate safe practice.

ADDITIONAL TOPICS

(1) ASTRONOMY

The Movements of the Earth

Day and night.

The seasons.

The inclination of the earth's axis. The variation of night and day. The changing angle between the sun's rays and the surface of the earth.

The variation of local time with longitude.

Measuring time.

The Solar System

The sun as a source of energy.

Sunspots.

Effects of sunspots on radio communications and as providing evidence of the nature of the sun.

The planets—size, distance and eccentricity of orbit.

Comets, meteors and meteorites.

Stars and Star Groups

Recognition of common constellations and prominent stars.

For example: The Plough, Orion, Cassiopeia, Pegasus, Polaris, Betelgeuse and Sirius.

Distances in astronomy.

Light years only.

The nature of a galaxy.

Astronomical Instruments

Telescopes—refractors, reflectors.

Ray diagrams are not required.

The sextant.

The spectroscope.

The use of spectroscope to identify elements in stars.

(2) ELECTRONICS

Electrostatics

Forces between charged particles.

Like charges repel, unlike charges attract. Formal treatment of the inverse square law is not required but the fact that the force is dependent on the magnitude and the distance apart of the charges should be known.

Lines of force.

Only the field between oppositely charged parallel plates is required.

The potential energy of a charged capacitor.

The variation of charge with potential.

The variation of capacitance with the distance between the plates and the nature of the dielectric.

Generation of Alternating Current

Oscillation in a circuit consisting of an inductor and a capacitor in parallel.

The decay and maintenance of oscillation.

Resonance.

Only the principles, not the details, of oscillating circuits are required.

The moving coil microphone as a generator of audio-frequency alternating current.

The range of audio-frequencies.

The Rectification of Alternating Current by means of a semi-conductor diode and a thermionic diode

Questions will not be set on the theoretical explanations.

Amplification of Alternating Current by means of a transistor and a triode valve

A simple circuit for each should be known. In the transistor, the variation of collector current with base current in a common-emitter circuit and the need for base bias should be known. In the triode, the variation of anode current with grid voltage and the need for grid bias should be known.

Radio Communication

The transmission of intelligence by high frequency radio waves.

(a) Interrupted carrier wave.

(b) Modulated carrier wave.

Reception—selection of required carrier wave by means of a resonant circuit.

Demodulation of amplitude modulated signals by means of a diode.

A tuned radio frequency receiver.

Understanding of a simple receiver consisting of a tuned circuit, diode and earphones is required.

(3) HEAT ENGINES

The Internal Combustion Engine

The 4-stroke cycle.

General principle of spark ignition engines and diesel engines.

The 2-stroke cycle.

Consideration of construction details of a typical engine.

The following should be discussed: block, cylinders and pistons, crankshaft, camshaft, valves and connecting rods.

The main systems of a motor car engine.

Discussed from the viewpoint of the owner-driver with due consideration of care and maintenance. Carburation. Ignition and other circuits. Lubrication. Cooling. Steering. Brakes. Transmission.

Other types of Heat Engines

The principles of jet engines, gas turbines and ram jets.

Explained by block diagrams.

(4) NUCLEAR ENERGY

Structure of the Atom

The atom being treated as consisting of a nucleus of neutrons and protons, and outer electrons. Alpha, Beta and Gamma rays. Nuclear mass and isotopes, mass number and atomic number.

Splitting the Nucleus

Equivalence of mass and energy.

The formula $E = mc^2$ should be known but calculations will not be set.

Disintegration by neutrons.

Uranium fission chain reaction.

Application of Nuclear Energy

Nuclear power stations.

Consideration of atomic pile and reactor control. Similarities of conventional and nuclear power stations.

Radioactive isotopes as tracers.

Discussion of medical and industrial uses.

Great Names in Nuclear Energy

Credit to be given to the following with very brief outlines of their achievements whenever their discoveries are mentioned.

Bohr, Chadwick, Cockcroft, Curie, Einstein, Fermi, Rutherford, Thompson, Walton, Wilson.

PHYSICS WITH CHEMISTRY (South)

(a) Paper I Physics and Paper II Chemistry each of $1\frac{1}{2}$ hours duration 85%. (b) Teacher assessment 15%.

EXAMINATION NOTES

Each paper will be in two sections: each Section A (requiring about $\frac{1}{2}$ hour) will be made up of compulsory short answer questions and the two sections together will carry 35% of the total mark: each Section B (requiring about 1 hour) will contain 8 questions requiring detailed answers of which 4 are to be attempted, and the two Sections together will carry 50% of the total marks.

It is expected that a reasonably good candidate will be able to complete each paper in $1\frac{1}{2}$ hours, but an additional $\frac{1}{2}$ hour may be taken if required.

SYLLABUS NOTES

Some topics usually found in syllabuses at this stage have been deliberately omitted. Where teachers think that an omission is wrong, they should still teach the topic but they need not prepare candidates for an examination in it.

Although the syllabus is divided into the conventional subject headings, it is not intended to dictate the teacher's approach, nor the time in the course where a topic should be introduced. This will depend on the particular circumstances in each school.

In deciding which topics must be retained, the needs of pupils going on to apprenticeships and other training in Applied Science have been borne in mind.

It is hoped that in the teaching of the subject every opportunity of doing practical work will be taken and attention drawn to applications to present-day life. Candidates will be expected to show by their answers that they have performed practical experiments illustrating the subject matter and that they are familiar with fundamental processes. In general, the values of constants will be given but importance is attached to pupils knowing the approximate magnitude of physical quantities.

TEACHER ASSESSMENT

The subject teacher shall award up to 15% of marks for course work, practical work, projects, field work, hobbies, independent or group work.

Where applicable, a suitable record, i.e., a practical note book or folder which shows quite clearly the range of work covered, should be compiled by the pupil.

Indications of the work on which the Teacher Assessment will be based should be submitted by individual schools to the Board before the end of September of the current school year.

A mark list showing Teacher Assessment shall be forwarded by the subject teacher to the Board on or before a date prescribed. The pupil's record may be inspected in the school by the examiner and samples may be required for moderation.

SECTION I. PHYSICS

1. *Properties of Matter*

(a) *Basic ideas of the atom*

The atom being treated as consisting of a nucleus of neutrons and protons, and outer electrons.

(b) *Mass and density*

Both F.P.S. and C.G.S. units are required. Calculations on "Mass = Volume x density" are required but methods of determination of density are not required. An understanding of the relative density of common solids, liquids and gases is required.

(c) *Force and weight*

The distinction between mass and weight must be known. No formal statement of Newton's laws is expected but an understanding of the equation "Force = Mass x acceleration" will be required. F.P.S. units only.

(d) *Friction*

Qualitative treatment only.

(e) *Work, power and energy*

The general principles of machines, including mechanical advantage, velocity ratio and efficiency. As illustrated by the lever, inclined plane, screw, single string pulley system and hydraulic press. Units limited to foot-pounds and horse-power. The approximate numerical relationship between horse-power and watt should be known. Transformation and conservation of energy.

(f) *Moments*

The principle of moments. Applied to levers, simply supported beams and wheel and axle.

- (g) *Hooke's Law*
Experiments with spiral springs and with rubber. Modulus of elasticity is not required.
- (h) *Density of air*
Pressure. Atmospheric pressure. Simple mercury and aneroid barometers. Altimeter, syringe, cycle pump and siphon. Details of linkage of aneroid barometers are not required. In the case of the siphon, conditions for use, without explanation, will be accepted.
- (i) *Boyle's Law*
A formal statement is not expected, but the ability to use the relationship between pressure and volume is required.

2. Heat

- (a) *Sources of heat*
The sun as a primary source. Chemical, electrical and mechanical secondary sources to be included.
- (b) *Transfer of heat*
Conduction, convection and radiation.
Qualitative treatment only. Good conductors and insulators and their uses including the principle of the Davy lamp and insulating clothing.
- (c) *Measurements of temperature*
The simple liquid in glass thermometer. Fahrenheit and Centigrade scales. Conversion of scales.
The only special thermometer required is the clinical thermometer.
- (d) *Effects of heat*
Expansion of solids, liquids and gases.
Everyday applications to include unequal expansion of solids. Very simple calculations on coefficient of linear expansion. Effect of temperature on pressure and volume of a gas are required.
The anomalous expansion of water.
Hope's experiment is not required.
Measurement of heat. The calorie, Btu. and Therm. Specific heat and thermal capacity.
Calculations limited to the change of temperature of a single substance.
Change of state.
Simple account of change using Kinetic Theory. Idea of absolute zero.
Latent heat of fusion and vaporisation.
Qualitative questions only.
- (e) *Heat as a form of energy*
Examples of its conversion to mechanical energy. The 4-stroke internal combustion engine.

3. Light

- (a) *Sources of light*
Natural and artificial sources.
Sun, filament lamp and fluorescent tube. Variation of illumination with distance and brightness of source, very simply treated.
- (b) *Properties of light*
Travel in straight lines, shadows. Speed of light.
Pinhole camera to be included but no questions will be set on eclipses.
- (c) *Laws of reflection*
Reflection at plane surfaces. Position and nature of image. Effect of rotating mirror.
Experiments with the raybox will be preferred to pin methods.

(d) *Reflection at curved surfaces*

Spherical mirrors.

Position, size and nature of image to be found by graphical methods only. Common applications to include the mirror, periscope, the driving mirror, the shaving mirror and the comparison of the field of view of plane mirrors with spherical mirrors.

(e) *Refraction*

No formal statement of laws but explanation of refraction as caused by change of velocity with change of medium.

Total internal reflection.

Applications to include the use of a 90° prism.

Image formed by converging lens.

Position, size and nature of image to be found by graphical methods only.

The simple magnifier. The function of the objective lens in the projector. The camera.

The image being formed by a single movable lens with an iris diaphragm.

The eye as a simple optical instrument compared with the camera.

Diagram of the eye should show cornea, aqueous and vitreous humour, iris, crystalline lens, ciliary muscles and retina.

(f) *The Electro-magnetic spectrum*

The formation of a pure spectrum.

The position of X-rays, ultra violet, the visible spectrum, infra red and radio waves in the full electro-magnetic spectrum should be indicated.

The conversion of ultra violet to visible light by fluorescent substances.

(g) *Colour*

The mixing of coloured lights. Primary, secondary and complementary colours. The mixing of pigments.

4. *Sound*(a) *Production by vibrating sources*

Transmission.

Illustrated by experiments. An experiment to show the need for a material medium is expected.

(b) *Reflection of sound and echoes*(c) *The ear*

Treatment to include only the ear drums and linkage to the inner ear. The ability to reproduce diagrams is not required.

5. *Magnetism*(a) *Elementary properties of magnets and magnetic materials*

Methods of making and spoiling magnets. Magnetic induction.

Modern magnetic alloys should be included.

(b) *Magnetic field*

The understanding and the plotting of lines of force.

The field of a single bar magnet. The field between like poles and between unlike poles. Qualitative treatment of neutral point.

(c) *The Earth's magnetism*

Simple treatment, to include declination. (Details of compass construction will not be required.)

6. *Electricity*(a) *Primary cells*

The simple cell and the Leclanché dry cell.

A knowledge of local action and polarisation and their prevention in the dry cell will be expected. Details of the chemical action will not be required. (From 1967 a modern cell, e.g., the Mallory cell, will be examined.)

- (b) *Secondary cells*
The lead-acid cell.
No details of reactions are required, but a practical knowledge of the care and use of the cell will be expected.
- (c) *Conductors and insulators*
The choice of suitable insulators according to potential.
- (d) *The simple circuit*
The correct use of the ammeter and voltmeter in the circuit.
Resistance and the factors governing the resistance of a conductor.
A formal statement of resistivity is not required but the pupil should have a practical understanding of the effect of length, cross-section and type of material.
- (e) *Electrical units*
The Volt, the Ampere and the Ohm and the relationship between them.
A formal definition of Ohm's law is not required but pupils should have practical experience of the truth of the relationship.
- (f) *Resistance in series and in parallel*
No more than two resistances in parallel will be required.
- (g) *Heating effect of a current*
The watt and its relation to horse-power.
Practical applications; lamps, electric fires and fuses.
The kilowatt hour and the cost of electricity.
Reference should be made to the power needs of domestic equipment.
- (h) *Magnetic effect*
The electro magnet. The relay and the electric bell.
The fields of single conductors and flat coils are not required.
- (i) *Chemical effect*
Qualitative treatment of the electrolysis of acidulated water and of copper sulphate solution using copper electrodes.
The products of electrolysis should be known, but details of ion transport and discharge will not be expected.
Electroplating.
Illustrated by copper plating.
- (j) *Force on a current in a magnetic field*
The simple two pole motor.
Application of Fleming's left-hand rule.
- (k) *Electro-magnetic induction*
Elementary experiments which demonstrate the factors affecting the magnitude and direction of the induced electro-motive force.
Application of the right-hand rule. A formal statement of the laws is not required.
- (l) *Alternating current*
The nature of an electro-motive force generated by a single coil rotating in a magnetic field.
- (m) *Transformers*
Principles and applications of transformers.
The effect of turns ratio will be expected. In the examples set 100% efficiency will be assumed.
- (n) *Distribution of electrical energy*
The Grid System.
Single phase only. The advantages of high voltage transmission should be included.
- (o) *Household electricity*
Distribution in the house. The correct placing of switches and fuses. Safety factors.
No particular wiring system will be insisted upon but the system chosen should demonstrate safe practice.

SECTION II. CHEMISTRY

Syllabus

Air, its chief gaseous constituents including oxygen, nitrogen, water vapour, carbon dioxide.

Proportion of oxygen in air.

Oxygen, preparation and properties.

Water as a solvent.

Impurities and hardness.

Hydration, efflorescence and deliquescence.

Water as a compound.

Air content.

Action of the metals sodium, calcium, magnesium and iron on water.

Saturated and unsaturated solutions.

Hydrogen, preparation (from dilute acids), properties.

Oxidation and reduction.

Chalk (limestone and marble), quicklime, slaked lime.

Notes

Brief mention of argon and neon otherwise knowledge of rare gases not expected.

By alkaline pyrogallol.

Any recognised method of preparation. The burning of carbon, sulphur, magnesium and iron.

Acidic and basic oxides.

Temporary and permanent hardness methods of water softening ; by boiling and softening by soda, base exchange.

As illustrated by magnesium sulphate, sodium carbonate and calcium chloride.

Composition by volume and weight.

Life in water.

Conditions necessary for the rusting of iron. Methods of rust prevention.

Oxidation in terms of addition of oxygen or removal of hydrogen ; reduction as removal of oxygen or addition of hydrogen.

Application to Everyday Life

Medical and industrial uses.

Leaching of salts from soil.

Soap manufacture, detergents.

Meteorological balloons, hydrogenation of margarine. Production of synthetic petrol. Welding, coal gas.

Extraction of iron.

Cement and mortar.

<i>Syllabus</i>	<i>Notes</i>	<i>Application to Everyday Life</i>
Preparation and properties of carbon dioxide.		Fire extinguishers, mineral waters, 'dry ice', atomic reactor coolant, discharge tubes.
Carbonates and bicarbonates.	Action of heat and acids.	Uses of washing soda and baking soda.
Carbon cycle.	Addition of carbon dioxide to air—combustion, respiration, fermentation and decay, by product of industrial process and removal by plants.	
Carbon.	Allotropy: graphite, diamond, charcoal.	Industrial uses, grinding, graphite greases, gas absorption, pencils.
Combustion of carbon and carbon containing substances.	In (a) plentiful, (b) limited supplies of air. Energy changes in combustion should be discussed. Storing of energy as a result of photosynthesis and its release in respiration and combustion should also be discussed.	
Candle and Bunsen flame.	Combustion of candle, production of carbon dioxide and water.	
Coal—destructive distillation.	By-products, coal gas, coke, coal tar and ammonia. Detailed description of gas works not required.	Coal fires, water gas and producer gas as fuels.
Elements.	All substances formed from relatively few elements. Abundance of common elements.	
Atoms.	Idea of atomic structure—nucleus, protons and neutrons—electrons in orbit—electron shell.	

Molecules.	Compounds and mixtures, physical and chemical changes. Law of Conservation of Mass, and the constancy of chemical composition (Definite Proportions). Valency—formulae — atomic weights — molecular weights, simple examples of empirical formulae.	
Molecular Movement.	Gay-Lussac's Law, Avogadro's Law. Gas pressure as evidence of this. Boyle's Law. Formal statements of the laws mentioned are not expected but the ability to use the relationships expressed by the laws is required. Solids, liquids and gaseous states—changes of state—sublimation.	
Mixtures and separation of components.	By crystallisation, precipitation, filtration, distillation (all with reference to molecular activity).	
Acids, characteristics. General properties of acids.	Preparation of hydrochloric acid from common salt and nitric acid from potassium or sodium nitrate.	Acids in everyday life, acetic, tartaric, citric.
Bases, Characteristics. General properties of bases. Salts, methods of preparation.	Indicators limited to litmus, methyl orange and phenolphthalein. (a) By neutralisation, limited to sodium chloride and copper sulphate. (b) By the action of an acid on metal, limited to magnesium sulphate. (c) Double decomposition, limited to silver chloride and barium sulphate.	Photography and medicine.
Electrolysis.	Distinction between the terms electricity, electrolysis and electronics. Ionisation of simple inorganic acids and salts.	

Syllabus	Notes	Application to Everyday Life
Electrolysis of water. Ammonia : preparation and properties.	Laboratory preparation and details of its synthesis from nitrogen and hydrogen. (Haber Process).	Manufacture of nitric acid.
Ammonium salts. Nitric acid, reactions of nitric acid as (a) an acid, (b) an oxidising agent.	Action of heat on ammonium chloride. Large scale preparation by oxidation of ammonia should be discussed.	Fertilisers. Explosives : organic compounds containing nitro (NO_2) groups, nitrates (production).
Nitrates. Nitrogen cycle.	Limited to action of heat, solubility. Soil fertilisers as source of nitrogen, nitrifying bacteria.	
Sulphur : its extraction and uses.	Frasch process.	Manufacture of sulphuric acid, matches, chemicals such as carbon disulphide, medicaments, vulcanising rubber.
Allotropy of sulphur. Sulphur dioxide : preparation and properties.	Crystalline, liquid and amorphous. Action of hot concentrated sulphuric acid on copper.	Fumigant, preservative, use in refrigerators.
Sulphurous acid. Sulphuric acid, properties of concentrated and dilute acid.	Outline of preparation by contact process, no details of commercial plant required.	Bleaching agent.
Hydrogen chloride, preparation and properties. Chlorine, preparation and properties.	Laboratory preparation by oxidation of hydrochloric acid using manganese dioxide details of preparation by electrolysis of brine.	Manufacture of bleaching powder—sterilising water.
Action of chlorine on water.	Bleaching action of chlorine. Preparation of bleaching powder.	

The metallic elements.	Physical and chemical differences between metallic and non-metallic elements. Action of dilute mineral acids on magnesium, aluminium, zinc, iron, lead and copper.	
Sodium.	Natural occurrence of sodium compounds. Production and uses of the hydroxide and the carbonate. Solvay process. Action of sodium hydroxide on aluminium and zinc.	Importance of rock salt as a raw material in the chemical industry.
Calcium.	Natural occurrence of calcium compounds.	Limestone as a raw material in extraction of iron, in agriculture, water softening, manufacture of glass, mortar.
Copper.	Physical characteristics.	
Iron.	Natural occurrence. Blast furnace and steel production.	Industrial.
Aluminium—abundance.	With particular reference to its production. No compounds except aluminium oxide.	
Identification tests.	To include recognition of : (a) the gases : hydrogen, oxygen, carbon dioxide, chlorine, hydrogen chloride, sulphur dioxide, ammonia, hydrogen sulphide and water vapour. (b) the acid radicals : nitrate, chloride, sulphate, carbonate. (c) test for an ammonium compound. Formal analysis not required.	

East Anglian
Regional Examinations Board
for the
Certificate of
Secondary Education

SECTION 15

Technical Drawing
Syllabuses
1966

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TECHNICAL DRAWING

The Board is offering Mode 1 examinations in three subjects :
Geometrical and Building Drawing (North).
Geometrical and Engineering Drawing (North).
Technical Drawing (South).

GEOMETRICAL AND BUILDING DRAWING (North)

(a) Paper I 2½ hours duration 50%. (b) Paper II 2½ hours duration 50%.

NOTES

There will be a wide range of questions bearing in mind the background of the candidate.

The essence of Technical Drawing is the ability to think three dimensionally and to translate three dimensional subject matter into two dimensional representation.

A reasonable standard of draughtsmanship is expected.

Plane and solid geometrical constructions will be applied to the solution of practical problems.

Freehand work is not a separate section of Technical Drawing but is one method of producing drawings either pictorially or orthographically. The kind of question that requires freehand drawing will therefore be basically the same as for instrument work.

Layout, lettering, dimensions and conventions should conform to the recommendations of B.S.1192.

Radius curves, french curves, scale rules, parallel rule and similar drawing aids may be used.

Answers will be required on half imperial (22 in. x 15 in.) drawing paper.

The use of suitable reference books will be permitted.

Questions may be set in first or third angle orthographic projection, and may be taken from models, sketches, written instructions and incomplete drawings.

SYLLABUS

PAPER I

Construction of triangles from given data.

Simple application of Pythagoras' Theorem.

Construction of polygons.

Construction of the ellipse, alternative methods, given major and minor axes.

Inscribed, circumscribed and escribed circles.

Tangents to the circle and tangential arcs.

Division of lines into a given number of equal parts.

Simple plain and diagonal scales.

Isometric projection (without isometric scale).

Oblique projection at 45 degrees, 3rd axis at half true length.

Development of simple solids, cube, prisms, cone, cylinder and pyramid, including simple truncations.

Simple interpenetration of geometrical solids.

Auxiliary projections and true shapes.

The path of points in simple link mechanisms, circular and reciprocating motion.

Simple true lengths and true angles.

PAPER II

Types of lines, figures and letters.

Projection of sectional elevations and plans.

Drawing of assembled components.

Separated or exploded views.

Axonometric projection.

Freehand drawing, pictorial and orthographic, using squared or grid paper, without shading.

Graphical symbols ; windows, doors, etc.

Representation of materials.

Questions may be set based on :

(a) Common woodworking joints : mortise and tenon, housings, half-laps, tusk tenons, dovetails.

(b) Stud partitions and doorways.

(c) Lugged and braced and panelled doors.

(d) Rebated door frames.

(e) Window frames and casements.

(f) Timber floors.

(g) Single roof.

(h) Cold and hot water systems.

(i) Flashings.

(j) Pipework.

(k) Foundations. Sleeper walls.

(l) Common brickwork bonds : Stretcher, English, Flemish, English garden wall, Flemish garden wall, Monk. Simple arches in half brick rings.

(m) Bonding to square return angles. Piers. Fireplace construction. Flue stacks.

(n) Cavity walls.

(o) Damp courses.

(p) Window and door openings.

(q) Simple corbelling and oversailing courses, brick copings and cappings.

COURSE WORK

An assessment of the course work of all candidates, made by the specialist teacher, should be available to the moderator, the assessment to conform to the recommendations of 'Examinations Bulletin No. 1. The Certificate of Secondary Education', Appendix 3 (B).

A flat folio of all work completed during the candidates' final year should be available until after moderation.

GEOMETRICAL AND ENGINEERING DRAWING (North)

(a) Paper I 2¼ hours duration 50%. (b) Paper II 2¼ hours duration 50%.

NOTES

There will be a wide range of questions bearing in mind the background of the candidate.

The essence of Technical Drawing is the ability to think three dimensionally and to translate three dimensional subject matter into two dimensional representation.

A reasonable standard of draughtsmanship is expected.

Plane and solid geometrical constructions will be applied to the solution of practical problems.

Freehand work is not a separate section of Technical Drawing but is one method of producing drawings either pictorially or orthographically. The kind of question that requires freehand drawing will therefore be basically the same as for instrument work.

Layout, lettering, dimensions and conventions should conform to the recommendations of B.S.308.

Radius curves, french curves, scale rules, parallel rule and similar drawing aids may be used.

Answers will be required on half imperial (22 in. x 15 in.) drawing paper.

The use of suitable reference books will be permitted.

Questions may be set in first or third angle orthographic projection, and may be taken from models, sketches, written instructions and incomplete drawings.

PAPER I

The syllabus and examination will be the same as that in Geometrical and Building Drawing (North) (see page 3).

PAPER II

Types of lines, figures and letters.

Projection of sectional elevations and plans.

Conventional representation of screw threads.

Proportions of standard nuts and bolts.

Types of screw threads, V threads and square threads.

Screws, studs and locking devices, particular uses and standard representation.

Keys and keyways.

Drawing of assembled components.

Separated or exploded views.

Freehand drawing, pictorial and orthographic, using squared or grid paper, without shading.

Questions may be set based on simple engineering solids, bearings, brackets, pulleys, simple couplings, flanged pipes, valves, machine parts, details of steam or petrol engines, etc.

COURSE WORK

An assessment of the course work of all candidates, made by the specialist teacher, should be available to the moderator, the assessment to conform to the recommendations of 'Examinations Bulletin No. 1. The Certificate of Secondary Education', Appendix 3 (B).

A flat folio of all work completed during the candidates' final year should be available until after moderation.

TECHNICAL DRAWING (South)

(a) Paper I 2 hours duration 40%. (b) Paper II 2½ hours duration plus 10 minutes reading time 60%.

The syllabus is such that the individual teacher's approach will not be in any way restricted. Questions will have a practical application rather than be mere problems in plane and solid geometry.

It shall aim at fostering the candidate's ability to use drawing instruments and to apply the simple fundamental principles underlying Technical Drawing, his ability to think in three dimensions, to interpret drawings and to express ideas by drawing or freehand sketching.

PAPER I—GEOMETRY

Applied Plane Geometry

1. Construction of scales (plane, diagonal and simple proportional in English or metric measure, using decimal or vulgar fractions if required in the former). Division of lines (unrealistic fractions will be avoided).
2. Simple construction of irregular and regular plane figures—triangles, quadrilaterals and the usual five regular polygons (excluding 7-sided). The knowledge of the construction of any regular polygon.
3. Circles to satisfy given conditions involving other circles, lines and points.
4. True ellipses by any method (the method used to be stated by the candidate) including tangency and normals.
5. Simple loci (simple link motions, helix and cycloid omitting tangents and normals).
6. Linear reduction and enlargement of plane figures.

Applied Solid Geometry

1. Orthographic representation of simple solids in various positions relative to the principal planes.
2. Simple views on auxiliary planes.
3. True lengths from projections and the angles of inclination to the horizontal and vertical planes (excluding the oblique plane).
4. Development of right prisms, pyramids, cylinders and cones.
5. Simple sectional views and true shapes of sections, including conic sections.
6. Simple problems in interpenetration of cylinders and prisms with co-planar axes.
7. Isometric and oblique projections of solids including cylinders. The isometric scale will not be used but in oblique projections the 45° half scale (Harrisons Pictorial) will be used.

The paper will consist of 15/20 short compulsory questions covering the whole of this section of the syllabus (16% of the marks) followed by a choice of 3 questions from 5 taken from any part of the Geometry Section (24% of the marks).

PAPER II—TECHNICAL DRAWING

Three compulsory questions will be set as follows :

1. A pictorial sketch from a photograph, block or given orthographic projection. If a solid is used, then there will be sufficient tolerance allowed. Sketches will be in proportion and not necessarily full size. There will be no sketching from memory. (12% of the marks.)
2. (a) A freehand drawing of the answer to the main orthographic drawing will be done first and will show sufficient detail to enable the main drawing to be worked.
(b) An orthographic projection in First or Third Angle projection of a simple component or assembly. The projection used must be stated. The component may be shown in the question as a detail drawing of parts to be assembled. Simple sections may be included. (36% of the marks).
3. A "Reading question" on the lines of those in para. 348 of C.S.E. Bulletin No. 1. (12% of the marks.)

B.S.308 will be used where applicable, including conventional representation and proportions of screw threads, nuts, bolts and studs.

COURSE WORK

A folio of course work will be available.

In order to ensure that course work plays a fair and useful part in the grading, the following arrangements will be adopted :

- (a) Each candidate will have a report submitted to the Board by his teacher. The report will show :
 - (i) A general grading, in order of merit, within his (the candidate's) school in Technical Drawing.
 - (ii) The teacher's assessment of his probable C.S.E. Grade, the grading to be based on accuracy, speed and comprehension of Technical Drawing.
- (b) The Moderator will compare each report with the examination achievement.
- (c) If the examination result is at variance with the teacher's assessment then he (the moderator) should send for the work done by the candidate during his final year, and will, at his discretion, adjust the candidate's grade upwards if the course work warrants it.
- (d) The Moderator will never downgrade a candidate because of his course work.

STATE OF NEW YORK

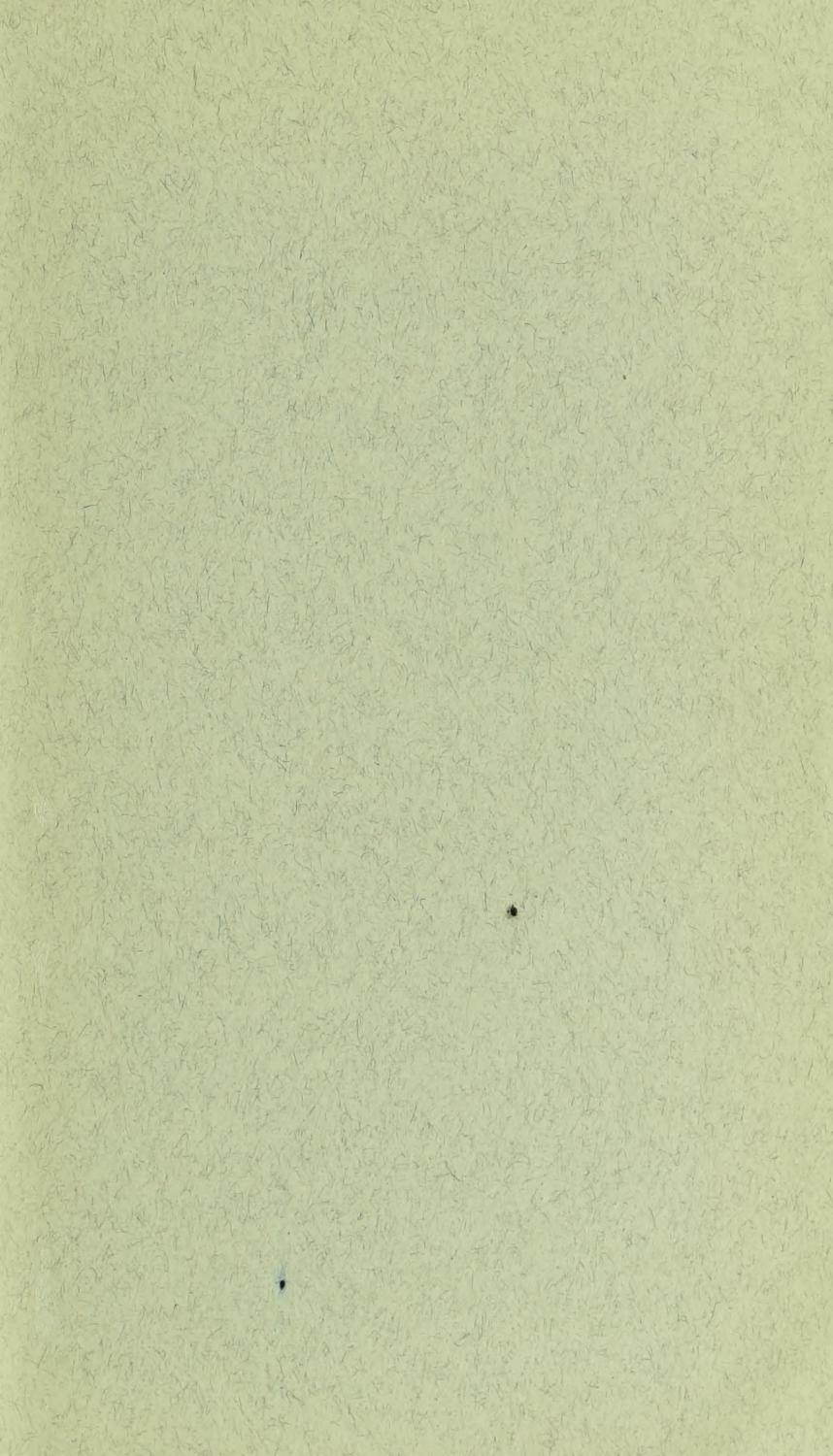
IN SENATE, January 15, 1876.

REPORT OF THE COMMISSIONERS OF THE LAND OFFICE, IN ANSWER TO A RESOLUTION PASSED BY THE SENATE, APRIL 18, 1875.

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