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AN EXPERIMENTAL EXAMINATION IN GENERAL STUDIES

Introduction

1. On the introduction of the General Certificate of Education in 1951 the Joint Matriculation Board laid down university entrance requirements for the period 1951—1955. Towards the close of this period the Board undertook a review of its requirements in the light of experience of their working. As a result the requirements have been extended without radical modification until 1961. In the discussions leading up to this decision, reference was frequently made to the possibility of using a test of general studies as part of the evidence of fitness to enter a university. The Board had found that there was widespread agreement that candidates for entry to a university should provide evidence of both specialist studies and of "general education". It was generally agreed that passes at the Advanced level of the G.C.E. afford evidence of special studies, but the Board found a diversity of opinions about the evidence of general education which should be required. Passes at the Ordinary level are normally gained at the age of sixteen and are no evidence that general studies have been maintained up to the time of university entrance. Some drew the conclusion that university entrance requirements should be solely in terms of passes at the Advanced level and that the universities should "trust the schools" to see that general education was provided up to the time of entry to the university. Many, who felt there should be more tangible evidence of general studies up to the age of entry, deplored the lack of a G.C.E. examination at a level suitable to test non-specialist studies in the sixth form, a level somewhere near the Higher School Certificate Subsidiary level. It was in this context that the suggestion of a test of general studies at the sixth-form level was frequently though tentatively made.

2. It is not surprising that suggestions for the use of a test of general studies as a qualification for entry to a university were tentative. There is as yet little evidence about the efficacy of such a test. Moreover, teachers hold diverse opinions about the value of an examination of general studies from the point of view of their school courses. Some would maintain that their own pupils at least get a satisfactory general education incidentally as a result of their home upbringing and their school life, and that an examination would spoil this general education. Others would declare that their pupils come from an environment which is incapable of providing a good general education and that the best way to get out of such an environment is to pass in two subjects at the Advanced level and gain admission to

a university. They feel that in the interests of their pupils it is better to concentrate on the subjects of the Advanced level examination and of the future university course rather than to diffuse interest over general studies and run the risk of failure in an examination on a syllabus not defined in detail. Others again feel that since their pupils' environment is defective as a stimulus to general education the school should try to make good the defect. The first two groups naturally feel that an examination in general studies would harm their pupils rather than help them, and it is only for the third group that such an examination can have any attraction. It was with regard to the views of this third body of opinion that the Board considered what part an examination in general studies might play in university entrance requirements.

3. The Board considered in particular a suggestion that one of the alternative sets of qualifications for university entrance might consist of passes in English Language at the Ordinary level, passes in two subjects at the Advanced level, and a pass in General Studies at the same sitting as one or both of the Advanced passes. The Board did not incorporate this suggestion in its university entrance requirements for 1956—1961 since the practicability of an examination in General Studies for pupils of eighteen years needed exploration, but it referred to its interest in the suggestion in its pamphlet "University Entrance Requirements after 1956", published in 1954, in the following words:

"If a suitable form can be evolved, a General Paper at the Ordinary level or an examination test at the Advanced level consisting of several 'general' papers may be a solution of some of the problems presented to the schools by the need to educate their pupils while giving them at the same time initiation into those specialist trainings which have come to be known as 'Literature', 'History', 'Classics', 'Mathematics', 'Physics' and so forth. Such a test might have the very desirable result that 'general' study was carried on in the sixth form side by side with specializing courses right up to the stage of entry to the university. The Board's present General Paper at the Ordinary level is meeting with some approval but the best kind of test may not have been found and as yet it seems premature to make this a compulsory part of university entrance requirements. A syllabus for an analogous test at the Advanced level, 'General Studies', is at present under active consideration."

4. The writer decided to try to make up an examination in General Studies suitable for pupils in the second or third year of the sixth form who were sitting the G.C.E. examination at the Advanced

level. With the approval of the Board and the co-operation of a number of schools he carried out the experiment which is here reported.

Description of the question papers

5. What evidence of fitness to enter a university could a test of general studies at the sixth-form level be expected to provide, on the assumption that evidence about special abilities would be provided by passes in subjects at the Advanced level? The answer to this question would suggest the general character of the test. It was felt that universities would value evidence about candidates' general intelligence, especially as shown in ability to use language. Linguistic ability needs to be well developed for studies in any university faculty or department. For some studies moderate ability in this direction will suffice if it is supported by mathematical and other abilities. (It has to be assumed for purposes of minimum requirements common to all entrants, that any special linguistic or mathematical qualifications will be ensured by faculty or departmental requirements.) In addition to general ability well developed in a linguistic direction and possibly in a mathematical direction, a university student even in these days of specialisation may be expected to have shown some curiosity about the world in which he lives, with its inexhaustible interest for a civilised mind. A youth of eighteen could not be expected to have explored many interests far, but might be expected to show some power of discussing a few of them with knowledge and understanding. Here it was felt that experience with the General Paper which the Board introduced in 1951 was a good clue to what might be expected. The General Paper requires candidates to write about five topics in three hours, the topics being chosen by the candidate from a wide choice in the fields of social and political affairs, science, and the arts.

6. The examination of a subject at the Advanced level of the G.C.E. typically requires six hours of written work, and this duration was therefore chosen for the experimental General Studies examination. It was decided to allocate approximately three hours to questions very similar in character to those constituting the G.C.E. General Paper, the remaining three hours being devoted to questions designed to test the abilities already referred to. It was decided to experiment in these questions with tests mainly not of the essay type, since these would be fully provided for in the questions of the General Paper type. This would enable more questions to be asked in the given time and permit a wider sampling of the candidates' abilities; secondly it would increase the reliability of the marking, since such questions can be marked more objectively than essays; thirdly it would provide relief and variety for the candidates. To anticipate the results, it may be stated that in the event the typical candidate

wrote five answers of the usual essay type, requiring about thirty-five minutes each, and eight answers of other types involving less continuous writing. Thus the experimental examination is equivalent to the G.C.E. General Paper plus another paper of eight questions.

7. An obvious way of dividing the six hours available would have been to allocate three hours to questions similar to those constituting the G.C.E. General Paper, and three hours to the more experimental questions. It was decided, however, to divide the time on a somewhat different principle by setting three papers, each of two hours. Copies of the papers are given in Appendix II. Paper I includes questions, mostly not of the essay type, of a linguistic character. Paper II includes questions of the essay type and others, the essays all being on topics connected with science, the other questions involving a variety of exercises in arithmetic and reasoning. Paper III, apart from one short question, is entirely of the essay type, the topics being half from the social and political or current affairs field, half from the field of the arts. It would of course be an easy matter to rearrange the questions from all three papers in a different combination.

8. Paper I was made up as follows:

SECTION A

Question 1, a "vocabulary" question, was included because there is reason to believe that vocabulary is one of the best single indices of general and linguistic ability.

Question 2, a "comprehension" question, requires the reading of English prose with understanding—a well-tried test of academic ability.

SECTION B

Questions 3, 4, 5 and 6 were intended to test the ability to read with understanding a passage of prose in a foreign language. They were included in view of the possibility that minimum university entrance requirements might be based on English Language, two Advanced subjects, and General Studies, as suggested in the Board's pamphlet; in this event, it would be necessary to include in the General Studies papers a test of ability to read a language other than English.

Question 7 may be described roughly as a test of "verbal analogies". It was designed to test much the same abilities as Question 1.

Question 8, an essay question on language, was at once a test of interest in language and of ability to write English.

9. The rubric of Paper I requires candidates to answer five questions so distributed that all candidates were tested in at least

one foreign language. A candidate could offer as many as three languages other than English. Those who could offer only one, or two, could avail themselves of Questions 7 and 8.

10. The questions on languages other than English presupposed study up to about the G.C.E. Ordinary level. They would be easy for candidates who were taking these languages at Advanced level. In a general paper which is open to all candidates a question related to a school subject (e.g. a language) will tend to be easy for a specialist in that subject, and to give him little opportunity of displaying his knowledge to full advantage. On the other hand, in other questions (e.g. on science) the same candidate will have no advantage, but some other candidate will.

11. Paper II was made up as follows:

SECTION A

Question 1 involves the interpretation of a table of statistics. Candidates are required to perform some simple arithmetical computations and to draw inferences from data. No specialist knowledge of mathematics is called for, but candidates with well-developed mathematical ability would probably be at an advantage. It was intended to give credit for general and numerical abilities, as the language questions do for general and linguistic abilities.

Question 2 is a test of arithmetical reasoning and calculation, intended to serve a purpose similar to that of Question 1.

Questions 3 and 4 were intended to be tests of abilities such as are employed in scientific reasoning.

SECTION B

Questions 5—10 require candidates to write about topics of scientific interest. It was intended that candidates not studying science subjects at the Advanced level should be able to answer questions from this section, though no doubt the science specialist would here be at some advantage. This section corresponds closely with the science section of the G.C.E. General Paper.

12. The rubric of Paper II requires each candidate to answer at least one question in which non-linguistic abilities are emphasised, and one question on a scientific topic in the "essay" form. Beyond this, a candidate could if he wished show a preference for a linguistic or a non-linguistic form of answer.

13. Paper III was made up as follows:

SECTION A

Question 1, on quotations, was expected to give some index of a candidate's general knowledge and literary background.

SECTION B

Questions 2 to 7 called for answers of the "essay" type on topics which may be broadly described as social, political and "current affairs".

SECTION C

Questions 8 to 13 called for "essay" type answers on topics related to literature and the other arts.

14. The rubric of Paper III requires candidates to answer questions from sections which correspond closely to two sections of the G.C.E. General Paper.

15. In view of the numerous options open to candidates, it is of interest to see what the typical candidate actually did. This may be seen by listing the questions which as it turned out were most frequently answered in fulfilment of the rubrics. These were as follows:

Paper I**SECTION A**

- Question 1. Vocabulary (compulsory).
- Question 2. Comprehension (compulsory).

SECTION B

- Question 5. French.
- Question 7. Verbal analogies.
- Question 8. Essay on language.

Paper II**SECTION A**

- Question 1. Interpretation of statistics.
- Question 2. Arithmetic.
- Question 3. Scientific inference.

SECTION B

- Question 10. Science essay.

Paper III**SECTION A**

- Question 1. Quotations (compulsory).

SECTION B

- Question 4. Essay on problems of immigration.
- Question 7. Essay on morals and religion.

SECTION C

Question 8. Essay on a programme of gramophone records.

The trial of the papers

16. The General Studies examination was tried out in some of the grammar schools which take the Board's G.C.E. examination. The schools invited to take part in the experiment were schools whose headmasters or headmistresses were past or present members of the Board and schools, mostly in the Manchester area, whose heads were known personally to the writer. Three of these schools were for good reasons unable to take part, but seventeen agreed to do so, even at some inconvenience to themselves.¹ The schools which took the examination, and the number of candidates they entered, were as follows:

<i>School</i>	<i>Number of candidates</i>
1. Allerton High School, Leeds	28
2. Bolton School (Boys' Division)	78
3. Bradford Girls' Grammar School	45
4. Doncaster Grammar School	8
5. Ecclesfield Grammar School	30
6. King Edward's Grammar School for Boys, Aston, Birmingham	25
7. King Edward's Grammar School for Girls, Camp Hill, Birmingham	28
8. Levenshulme High School for Girls, Manchester	15
9. Liverpool Institute High School for Boys	66
10. Manchester Central High School for Girls	14
11. Manchester High School for Girls	20
12. Rotherham High School for Girls	19
13. Salford Grammar School	13
14. Sir John Deane's Grammar School, Northwich ..	46
15. Tamworth Girls' High School	12
16. Whalley Range High School for Girls, Manchester	14
17. William Hulme's Grammar School, Manchester ..	49
Total ..	510

¹ At the request of its headmaster, one school in Northern Ireland was allowed to take the experimental examination, but the results are not included in this report since the school does not take the Board's G.C.E. examinations and no G.C.E. results are therefore available for comparison.

17. The schools were given the choice of taking the papers before or after the G.C.E. summer examination of 1955. One school elected to sit them in May before the G.C.E. examination. The others preferred to sit in July after the G.C.E. examination.

18. Each school was asked to send in a list of the pupils who, it was intended, should sit the papers. The candidates, as they may be called, were to be arranged in an "order of merit" by the school. This "order of merit" had to be sent in before the school received the question papers. The school order of merit was intended to play an important part in assessing the worth of the experimental examination papers. The examination could not be regarded as valid if it produced results which were grossly at variance with the school's estimate of the relative position of the candidates. The following extract from the letter sent to the heads of the schools will show what they were asked to do:

I suggest you ask yourself, "Suppose there were an ideal test of the abilities of a sixth-form pupil in his studies as a whole, bearing in mind that he may have the opportunity of displaying his specialist work more fully in the G.C.E. Advanced papers, how would this candidate compare with his fellows in that ideal test?" An alternative way of approaching the task, which I regard as equivalent, would be to ask, "Suppose these pupils were seeking entry to a university and had the necessary Advanced level passes, what additional estimate could I most helpfully furnish to the university?"

19. The number of candidates in the order of merit lists varied considerably from school to school or from form to form. For convenience in handling the data, a candidate's place in the order of merit was converted into a mark on a percentage scale. This was done in such a way that, irrespective of the size of the group, the candidate half way down the order of merit list was given a mark of 50, and other positions in the order of merit were similarly given comparable marks.² These marks will be referred to as "scaled school estimates".

20. The arrangements for the conduct of the examination followed as far as possible the normal procedure of the Joint Matriculation Board. The Board despatched the question papers to the schools. The schools were asked to conduct the examination as far as possible as if it were a G.C.E. examination, and no departure from the normal practice was reported. It was not to be expected, of course, that

² Vernon's table was used, with a standard deviation of 15. See Vernon, P. E. "Notes on statistical methods in common use in vocational and educational research" (1945). Mimeographed. The Admiralty, Senior Psychologist's Department.

candidates would sit an experimental examination in the same frame of mind as that in which they sit a G.C.E. examination, but apart from signs of levity in a few of the scripts there was every indication that the candidates had tried to do as well as they could.

21. The scripts were marked by four examiners drawn from the panel of examiners for the G.C.E. General Paper. The examiners had previously had a meeting with the writer to discuss and modify the mark scheme which he had drawn up beforehand.

22. The marking scheme had allocated 100 marks to each of the three papers. The candidates' marks out of 300 were converted into "grades" similar to those in which the Board records the results of the G.C.E. examinations. The lowest passing grade in the G.C.E. at the Advanced level is 40; approximately 75 to 80 per cent of the candidates achieve this or a higher grade. In the experimental General Studies examination there was of course no question of passing or failing, but grades were assigned to the candidates in such a way that between 75 and 80 per cent of the candidates received grades of 40 and upwards. The average grade in General Studies was approximately 50.

Reliability of the marking

23. One of the objects of the experiment was to see whether a test of General Studies could be set which could be marked reliably. An examination can serve a useful purpose only if all concerned with it can have a justifiable confidence that the marks are reasonably reliable. Examinations have not altogether recovered from the damaging reports on a number of investigations of their reliability, particularly those of Valentine and of Hartog and Rhodes. The conclusions of these investigations tend to be applied uncritically to current examination procedures, which bear little resemblance to those described in the reports. It was desirable to know whether the normal examining procedure of the Board, or something close to it, resulted in scripts being reliably marked. Accordingly, each script was marked independently by two examiners. The first examiner was asked to refrain from making any marks on the scripts, so that he should not influence the second examiner. This made the task of the first examiner more difficult than in a normal G.C.E. examination, for the indication of errors, the crossing out of irrelevancies, the insertion of comments and other notations greatly help the examiner to arrive at the assessment of a script. The second examiner marked the scripts in the normal way.

24. Each of the four examiners marked approximately one-quarter of the total number of scripts as first marker, made a record

of his marks, then sent the scripts on unaltered to the second examiner. Each examiner then marked approximately one quarter of the scripts as second examiner.

25. The mark assigned to each candidate by the first examiner was compared with the mark assigned by the second examiner. The comparison was made by means of coefficients of correlation, which have a maximum value of $+1$. The coefficients of correlation between the marks of the first examiner and those of the second examiner are given in Table 1. The four examiners are indicated by A, B, C and D.

TABLE 1
INTER-MARKER RELIABILITY IN GENERAL STUDIES

<i>First examiner</i>	<i>Second examiner</i>	<i>Number of candidates</i>	<i>Agreement</i>
A	B	137	.92
B	D	146	.94
C	A	100	.93
D	C	127	.91

26. These reliability coefficients compare favourably with those for many psychological tests. The result is particularly remarkable in that an examination in General Studies is not a test of well-defined abilities, as is an examination in a school subject at the G.C.E. Advanced level. There had been no syllabus, no previous examination paper; no specialist teacher had prepared the candidates for the examination. It is possible that in a subject examination even higher reliability could be achieved. It might be, of course, that the agreement between the General Studies examiners was exceptional, due to special circumstances. Certainly the examiners were very good, experienced examiners, but this is not an exceptional circumstance. A more likely explanation is to be found in the fact that a considerable proportion of the questions was in various forms which permitted of objective marking.

27. Paper III calls for answers almost exclusively in the "essay" form. In this respect it is typical of many papers in the G.C.E. examination. The agreement between the examiners in marking this paper is therefore of some interest as evidence about the reliability of marking in the G.C.E. examination. The coefficients of correlation between the marks of the first examiner and those of the second examiner in Paper III are given in Table 2.

TABLE 2
INTER-MARKER RELIABILITY IN PAPER III

<i>First examiner</i>	<i>Second examiner</i>	<i>Number of candidates</i>	<i>Agreement</i>	<i>Estimated agreement in a three-hour paper</i>
A	B	137	.70	.78
B	D	146	.86	.90
C	A	100	.81	.86
D	C	127	.80	.86

Paper III was a two-hour paper, whereas G.C.E. papers for sixth-form pupils are more typically of three hours duration. A longer paper enables examiners to assess candidates more reliably. It is possible to estimate (by the Spearman-Brown formula) the reliability of a three-hour paper similar to Paper III. The agreement between examiners in such a paper is estimated in the last column of Table 2. While considerably short of perfect, it is much better than one would suppose from the criticisms of examinations which are sometimes made without much supporting evidence.

Agreement between marks and school estimates

28. The General Studies papers produced grades which were reliable in the sense that they did not greatly depend on which examiner marked the scripts. The next question of interest is how far the examination results agree with the assessments of the candidates which the schools had made in advance. The shortest answer to this question is that the agreement between the scaled school estimates and the grades of the 510 candidates is represented by a correlation coefficient of 0.58. This is a fair but not close measure of agreement: on the whole the candidates placed high in their order of merit by the schools were awarded high marks in the examination, but there were considerable discrepancies.

29. To evaluate this degree of agreement between school estimate and examination result, one may compare it with the agreement between school estimates and examination results in school subjects. The Board invites schools to estimate the grades their candidates will receive in the G.C.E. examination. Schools submit separate estimates for the different subjects. The estimates supplied by two schools, a boys' school and a girls' school, with comparatively large entries, have been studied in several representative subjects. The

following table shows the relationship between school order of merit and order of merit in the examination, as represented by coefficients of correlation.

TABLE 3
AGREEMENT BETWEEN SCHOOL ESTIMATES AND EXAMINATION RESULTS

Subject	School A		School B	
	Number of candidates	Correlation	Number of candidates	Correlation
English Literature	22	.72	10	.92
French	15	.87	31	.76
Mathematics ..	—	—	16	.74
Physics	12	.82	—	—
Chemistry ..	11	.80	29	.78
General Studies:				
Arts VI ..	29	.68	17	.70
Science VI ..	16	.64	31	.45

30. Some schools estimate results even better than do these two, many are much less successful. It seems, however, that the agreement between school estimates and results was not so close in General Studies as it often is in typical school subjects. This is not surprising. In forecasting his pupils' results in the G.C.E. examination, a master knows precisely the syllabus on which the papers will be set, he is familiar with the papers set on this syllabus in previous years, and he has been teaching the candidate the subject for a considerable time in preparation for the examination. Ability to predict the results varies from teacher to teacher, but some can forecast the results with almost uncanny accuracy (a fact of which the Board makes use in deciding the results of candidates who for reasons such as illness have done very differently from what was expected). In the case of the experimental General Studies examination, however, the conditions were very different. There was no syllabus, there had been no previous examination, no master had been giving a course in preparation for the examination. There is little doubt that had the schools been shown the papers before their pupils sat them, they could have forecast the results more closely; but this would have been to test the teachers' acumen rather than to test the examination. The object of obtaining the teachers' estimates before they had seen the papers was to secure independent assessments, unaffected by the examination, with which the examination results could be compared.

School estimates must in the circumstances have been exceptionally difficult to make, and it is satisfactory that the experimental examination tallied as closely as it did with them.

31. In so far as the school estimates and the examination results do not tally with one another, it is impossible to decide which is the more valid assessment. That question could be answered only by comparing each with some third independent assessment assumed for the purpose to be a criterion, for example the candidates' marks in degree examinations at the university. No such data are available about these candidates. There is some evidence, however, that school marks correspond with marks in first-year university degree examinations to the extent of about .42 (English) to .59 (French).³ Thus if the marks in General Studies agreed perfectly with first-year university marks they would agree with school assessments about as closely as they do in fact agree.

32. The schools, when they were informed of the grades of their candidates, were generously ready to believe that the examination was as likely as the teacher to have made a good assessment of the abilities of their pupils. The headmaster of School B (see Table 3), for example, wrote: "My colleagues and I are very much impressed by the insight that these marks show into the real interests and abilities of the boys". The other comments received on this point were:

"We were very interested in the results, especially in the way they reflected the girls' maturity as people."

"We find (the results) extremely interesting and I think in general our opinion would be that the papers have indeed succeeded in grading the general knowledge and width of outlook of our candidates."

"We were most interested to see how near the grades were to our estimate of the girls. A and B were at the top and they gained States. C was at the bottom and she failed in the one subject we allowed her to take."

General Studies and the award of State Scholarships

33. It has now been shown that it is possible to set an examination which is probably at least as valid a measure of General Studies as any available and which can be marked reliably. It is not possible on the evidence available to show what would be the effect on schools and candidates of using such an examination as an optional element in university entrance requirements. It is possible, however, to

³ Scottish Council for Research in Education: *The Prognostic Value of University Entrance Examinations in Scotland* (London, 1936). See pages 61—65.

estimate the effect of permitting candidates for State Scholarships and Local Education Authority awards to use General Studies as a means of qualifying.

34. Of the 510 candidates who sat the examination in General Studies 205 were candidates for State Scholarships on the G.C.E. examination of 1955. Of these 205 candidates, 29 were recommended by the Board for State Scholarships, 4 were recommended as reserves, and the remaining 172 were not recommended.

35. The Board requires candidates for State Scholarships to offer three G.C.E. subjects at the Advanced level and to sit the Scholarship papers in two of these three subjects: this requirement may be denoted by $3A+2S$. It was possible to discover what would have been the effect of making recommendations on the basis of two G.C.E. subjects at the Advanced level, with the Scholarship papers in these two subjects, and the General Studies examination: this combination may be denoted by $2A+2S+GS$. Hypothetical recommendations were drawn up on this basis. The results are given in Table 4.

TABLE 4

STATE SCHOLARSHIP RESULTS ON ACTUAL AND HYPOTHETICAL BASIS OF AWARD

<i>Number of candidates recommended on basis of $3A+2S$</i>	<i>Hypothetical number of candidates recommended on basis of $2A+2S+GS$</i>		
	<i>Recommended</i>	<i>Reserves</i>	<i>Not recommended</i>
Recommended .. 29	23	1	5
Reserves 4	1	0	3
Not recommended 172	5	3	164
Total .. 205	29	4	172

36. Of the 29 candidates who were recommended by the Board for State Scholarships, 23 would have been recommended had their mark in General Studies been taken into account instead of the mark in the third Advanced subject. Of the 6 remaining 1 would have been recommended as a reserve and 5 would not have been recommended at all. On the other hand, out of the 172 candidates who were not recommended by the Board, 5 would have been recommended for State Scholarships and 3 as reserves had their marks in General Studies been used. Of the 205 candidates, 187

(23+164) or 91.2 per cent, would have achieved the same result on either basis of award, whereas 18, or 8.8 per cent, would have met with a different result.

37. Would the result on the basis of 2A+2S+GS have been fair? There is no means of determining this. The 18 cases in which the result would have been different were, however, studied. The candidates' headmasters and headmistresses were informed of the recommendations which had been made on the basis of the G.C.E. results only, and those which would have been made had General Studies been taken into account. The heads were invited to throw any light they could on the discrepancies, and they supplied illuminating information and comments. The explanations suggested naturally varied from candidate to candidate, and for this reason and because of the small numbers involved it is difficult to establish definite trends. It was notable that in cases where the candidate's position would have been improved by his result in General Studies, the schools stated that this reflected their own opinion of the candidate. In some cases in which the General Studies mark had not improved the candidates' position, the schools agreed that General Studies had correctly assessed their abilities, in one or two instances they preferred the actual result. Several heads suggested that the chief reason for the difference between the actual and the hypothetical recommendation was that pupils who were following courses in "Arts" subjects at school would tend to gain higher marks in General Studies than would those taking science subjects. This suggestion receives some support in the following figures. Of the 18 candidates concerned, 9 would have had their positions improved by General Studies and 9 would have dropped from "scholarship" to "reserve" or from "reserve" to "no recommendation". Of the 9 candidates who would have been promoted by General Studies, 8 were taking courses in "Arts" subjects. Of the 9 candidates who would have been demoted, 6 were offering science subjects in the G.C.E. Thus the General Studies examination seems to favour the very good "Arts" candidate. But in the opinion of several of the heads of schools, in doing so it provides a correct assessment of general education, since in their opinion the "Arts" pupil tends to have better opportunities for general education in the sixth form than are open to those following certain science courses. One headmaster went farther and put forward the tentative hypothesis that "it is easier for a hard-working student to do well in the science subjects at 'A' level by sheer industry than for the Arts student". This headmaster and several others felt that their state scholars who had not done so well in General Studies were distinguished more by industry than by general ability or achievement.

38. The cases which throw most light on the effect of the General Studies mark are those in which two or more candidates *at the same school* would have had their positions reversed by the General Studies marks. All the cases of this sort are summarised below.

(1) *School W*

<i>Candidate</i>	<i>Recommendation taking account of G.C.E. result only</i>	
	<i>G.C.E. result only</i>	<i>G.C.E. and General Studies</i>
A	State Scholarship	No recommendation
B	No recommendation	State Scholarship

The head of School W states that B (who, incidentally, had had higher marks than A in the 11-plus examination) is a girl in the "Arts" Sixth with a "flair" for literature, who enjoys reading, enjoys ideas, and likes finding things out for herself. A is an earnest boy who has worked extremely hard, indeed too hard, because he felt he must "do well and get a good job. He would get some pleasure from his work, but not so much as some students . . . there wouldn't be a great deal of sheer intellectual delight, of discovery and joy, that can illuminate one's studies especially in adolescence."

(2) *School X*

<i>Candidate</i>	<i>Recommendation taking account of G.C.E. result only</i>	
	<i>G.C.E. result only</i>	<i>G.C.E. and General Studies</i>
C	No recommendation	Reserve
D	Reserve	No recommendation
E	State Scholarship	No recommendation
F	Reserve	No recommendation

The head attributes the reversal of fortunes to the fact that C is in the "Arts" Sixth whereas D, E and F are on the science side. "To me it would appear that the 'narrowing' course is the Mathematics, Physics, Chemistry group." He believes, however, that later on in life the scientist is not necessarily narrower in his interests and knowledge than others.

(3) *School Y*

<i>Candidate</i>	<i>Recommendation taking account of</i>	
	<i>G.C.E. result only</i>	<i>G.C.E. and General Studies</i>
G	No recommendation	State Scholarship
H	State Scholarship	No recommendation

The head of School Y writes: "I don't think that there is any doubt whatever that G is a lively person with wide interests, a more mature person in every way than H and one ready for a university education. H is a boy of considerable ability but he has no conception of education outside learning things which will be useful for him in his job ... He will, no doubt, do very well in the field of chemistry but the General Studies paper has shown very obvious limitations in his personal development."

(4) *School Z*

<i>Candidate</i>	<i>Recommendation taking account of</i>	
	<i>G.C.E. result only</i>	<i>G.C.E. and General Studies</i>
J	No recommendation	State Scholarship
K	State Scholarship	No recommendation

The head writes: "K, who was awarded a State Scholarship is a thoughtful girl, an excellent worker, with appreciation. She is meticulous and accurate usually, and quite scholarly in her approach, but perhaps not so lively as some. J, who was not recommended for a scholarship, is a rather brilliant and unusual girl. She is not scholarly in the sense that she cannot discipline herself to accuracy, but she has a most interesting and lively mind, and an insatiable appetite for books and for discussion."

39. The information in the preceding paragraphs about State Scholarship candidates, interesting and suggestive though it is, should be interpreted with caution. All the candidates were of exceptionally high ability. Only a few marks may separate a candidate recommended for a State Scholarship from one recommended as a reserve, or the latter from the candidate who is not recommended for a State Scholarship but who will almost certainly gain an L.E.A. award. It would be unwarrantable to claim that either the G.C.E. examination or General Studies could infallibly make the fine distinctions which would place them in some "correct" order of merit. It should also be noted that though the candidates selected

for scholarships would have been largely the same persons whichever method of selection had been used, they might have been differently educated if General Studies had been tested.

General Studies and L.E.A. awards

40. It is not possible to say at all exactly what difference the General Studies marks would have made in Local Education Authority awards. Each L.E.A. prescribes its own conditions for awards. Some specify requirements as high as three Advanced subjects with Scholarship papers in two of them, others demand as little as two Advanced subjects, and there are many intermediate varieties. Moreover, the G.C.E. results are not the only evidence taken into consideration: use may be made of school reports, interviews and other sources of information. What part a General Studies examination might play in the process of making awards it would be for each L.E.A. to determine for itself. Many of the Authorities, however, request the Board to make recommendations on the basis of candidates' G.C.E. results. The Board in doing so considers all the available marks, and places the candidates it recommends for award in three classes, 1, 2 and 3. This classification represents the different degrees of confidence with which the Board predicts success in the university course.

41. Of the 510 candidates in General Studies, 251 were candidates for L.E.A. awards. The number recommended by the Board in each class was as given in Table 5. The table also shows the number and percentage in each class who had marks below 40 in General Studies. All the candidates whom the Board deemed most suitable for university courses "passed" in General Studies. Only 8 of the 124 recommended candidates would not have been recommended for L.E.A. awards had a "pass" in General Studies been required. But 28 of the 127 candidates who were not recommended because of their inadequate results in the G.C.E. examination would in any case have been disqualified by their failure in General Studies.

TABLE 5
CANDIDATES RECOMMENDED FOR L.E.A. AWARDS
AND THEIR PERFORMANCE IN GENERAL STUDIES

<i>Recommendation to L.E.A.</i>	<i>Number of candidates</i>	<i>Number of candidates with marks below 40 in General Studies</i>	<i>% of candidates with marks below 40 in each class</i>
Class 1	35	0	0.0
Class 2	31	2	6.5
Class 3	58	6	10.3
Unclassified	127	28	22.1

42. Thus the General Studies examination would have tended to select much the same candidates for L.E.A. awards as did the Board's present methods. Where it selected different candidates, there is no means of deciding at present which selection would be better justified by some independent criterion. There is no evidence, however, that any beneficial effects an examination in General Studies might have on sixth-form courses would have to be paid for by a loss of efficiency in selecting for awards.

Conclusion

43. It will be obvious that throughout this report it has been necessary to infer the possible effects of introducing an examination in General Studies from data obtained in a situation in which such an examination normally forms no part. The courses followed by the pupils examined had in no way been affected by the fact that the pupils later took the experimental papers. If in future it were expected that pupils might be taking an examination in General Studies, their courses would undoubtedly be affected in some way or other by this fact. Whether the introduction of an examination in General Studies would be desirable is a question of educational policy which a factual report of this kind cannot by itself determine. All that an investigation of this sort can do is to provide evidence from which some of the effects of such an examination may be predicted with somewhat greater confidence than would be possible in the absence of such evidence. The sort of inference which can be made from this report is that if for reasons of educational policy it were desirable to introduce an examination in General Studies, it would be practicable to devise an examination of some reliability and validity which would serve such purposes as the selection of university entrants with some hope of success. The report, it is suggested, provides some evidence that any educational benefits which might accrue from the introduction of an examination in General Studies would not necessarily have to be paid for by a loss of efficiency in the services which the existing examinations render to education.

Summary

44. (a) An examination intended as a test of general studies was taken by 510 boys and girls in the sixth forms of 17 grammar schools.

(b) The marks in the examination corresponded moderately well with the estimates of the pupils' abilities in general studies made independently by their schools.

(c) Examiners marking the same scripts independently of one another agreed well in the marks they awarded.

(d) Possible effects of using the examination in the award of State Scholarships and in the making of university awards by Local Education Authorities were investigated.

(e) It is suggested that should it be desired on educational grounds to introduce an examination in General Studies, this could be done without undue risk of loss of efficiency in the present functions of the G.C.E. examination.

Appendix I. Post-mortem

THE EXAMINERS' REPORTS

(1) The weaknesses of an examination are not usually patent before it is taken, unless it is possible to try out the questions in advance. They are painfully evident after the event. The examiners' reports on this examination reveal defects both in the questions and in the marking scheme. In Paper I, for example, Question 1 (vocabulary) and Question 7 (analogies) were rather easy. Question 2 (comprehension) was not a particularly good example of its type. The language questions varied in difficulty, Question 3 (Greek) being too easy for those candidates who answered it, Question 4 (Latin) being somewhat easy, Question 5 (French) being appropriate to many candidates, Question 6 (German) being somewhat more "linguistic" than the others. The time for Paper I may have been rather short. In general the examiners found this paper a very satisfactory one.

(2) Paper II proved rather difficult, largely because of the widespread weakness of the candidates in arithmetic. Question 1 (statistics) was too long: less computation should have been demanded, and it should have been made clear that log tables were allowed. The parts of the question calling for inferences were successful. Question 2 (arithmetic) was rather long, and many candidates seemed to be unpractised in arithmetic. Question 3 (scientific inference) was fairly successful though somewhat too involved. Question 4 (design of experiment) was a failure. The essay questions 5—10 were satisfactory in varying degrees.

(3) Paper III was for the most part closely similar in character to Sections 1 and 3 of the General Paper and most of the questions met with a reasonable measure of success. The novel Question 1 (quotations) proved very successful.

(4) Further experiment would no doubt enable the examination to be considerably improved.

A STATISTICAL ANALYSIS

(5) An attempt has also been made to judge the success of each question in the experimental examination by means of a statistical analysis of the marks. From one point of view, such an attempt is of no value: none of these questions will be used again. On the other hand it may be possible to gain some indication of the value of types of questions. Such indications cannot be very conclusive, since a question set may be a bad example of its type, and the failure of a question does not prove that a better question of the same type

would not succeed. Some confidence can however be placed in the success of a question: it should be possible to produce other questions of the same type which would also succeed.

(6) There is no very satisfactory criterion against which the success of the questions in the experimental examination can be evaluated. As has been pointed out in paragraph 30 of the report, school estimates of ability in general studies cannot provide as satisfactory a criterion as school estimates in school subjects for which there is a G.C.E. syllabus and examination. In these circumstances a criterion of some use, though it has defects, may be set up by assuming that the complete examination in General Studies is the best available measure of what is being examined. One may compare the candidates' performance in a given question with their performance in the examination as a whole. In some questions the marks will be borne out by the grades in the whole examination, in other questions the marks will not tally closely with the general run of the marks. In the latter case, of course, it may be that the question has succeeded in tapping some ability which has not been called into play very much by the other questions, and in that way the question may be making a valuable and distinctive contribution to the result precisely because it is not duplicating the work of other questions.

(7) These considerations should be borne in mind in interpreting the data given in Table 6. This table gives in column 1 the number of the paper and the number of the question followed by a brief indication of the subject of the question. The letter (E) in this column indicates a question calling for an answer of the "essay" type, the letter (O) for a question of the "objective" type. In column 2 is given the coefficient of correlation (tetrachoric r) between the marks gained in the question and the grades in the entire examination in General Studies. The questions have been arranged in order of the magnitude of these coefficients. Column 3 gives the number of candidates on which the coefficients were calculated. In most cases this was the total number of candidates who answered the question. In some cases, however, when all or most of the candidates had answered a question, the coefficients were calculated on a random sample of the total number for reasons of economy. The total number of candidates who answered a question is given in column 4.

TABLE 6

AGREEMENT BETWEEN MARK FOR QUESTION AND GRADE
FOR GENERAL STUDIES

(1) <i>Question</i>	(2) <i>Index of agreement</i>	(3) <i>Number on which index is calculated</i>	(4) <i>Number of candidates who answered question</i>
I 6. German (O)	·73	81	81
III 5. Inflation etc. (E)	·71	45	45
II 5. Scientific methods (E)	·64	73	73
III 1. Quotations (O)	·64	169	510
III 12. Art and representation (E)	·64	100	100
I 5. French (O)	·61	157	446
III 7. Morals (E)	·60	184	184
I 8. Language (E)	·58	108	298
III 6. Nationalisation (E)	·57	145	145
I 1. Vocabulary (O)	·56	510	510
III 3. Britain and Russia (E)	·56	64	64
III 4. Immigration (E)	·55	98	267
III 2. Act of Parliament (E)	·54	119	119
I 2. Comprehension (O)	·52	510	510
I 4. Latin (O)	·52	164	164
II 6. Value of science (E)	·51	155	155
III 8. Gramophone records (E)	·46	233	233
I 3. Greek (O)	·45	20	20
I 7. Analogies (O)	·44	163	503
III 9. Novels (E)	·44	161	161
II 8. "Electronic brain" (E)	·42	33	33
II 10. Applications of Physics (E)	·40	166	166
III 13. Pictures (E)	·40	57	57
II 9. Biology and disease (E)	·38	64	64
II 2. Arithmetic (O)	·33	149	446
II 1. Statistical inference (O)	·31	148	443
II 3. Scientific inference (O)	·20	149	473
II 7. History of science (E)	·20	112	112
III 11. Imagery in poetry (E)	·10	90	90
III 10. Comedy (E)	·06	19	19
II 4. Design of scientific experi- ment (E)	·00	26	26

(8) In spite of the hazards of interpretation, the following conclusions may be ventured.

- (i) Questions of the "essay" type and questions of the more "objective" type were about equally successful.
- (ii) Some successful questions of the "essay" type had been set in all sections of the examination, though more on social, political and current affairs than on the arts or on science.
- (iii) Questions of the "objective" type designed to test linguistic abilities succeeded very well.
- (iv) The few questions of the "objective" type which required the candidate to deal with numerical or scientific data (Paper II, Questions 1, 2 and 3) yielded marks which were not in close agreement with the grades in the examination as a whole. It would be erroneous to infer that these questions had not contributed to the efficiency of the examination in general studies. It is more probable that the low correlations reflect the fact that all the other questions are linguistic in their subject matter or call for an answer in the "essay" form. These three questions have probably demanded abilities not otherwise tested, and it may well be that an examination of General Studies should include a larger proportion of questions of this type of form and content.

Appendix II. The question papers in General Studies

(NOTE.—*Papers I and II were printed on quarto-sized paper and space was left where required for the candidate's answers, as in the "new-type" papers which the Board sets in, for instance, Geography and Physics at the Ordinary level. Paper III was printed in the normal question-paper format.*)

PAPER I

2 hours

Answer FIVE questions, including Questions 1 and 2 in Section A, and three of the six questions in Section B.

Some of the questions are followed by several alternative answers, one of which is correct. Each of the alternatives is numbered. In such questions, instead of writing out an answer, you are asked to write down the number of the correct alternative. This number is to be written in the space between the brackets which follow the alternative answers. Here is an example:

The capital of France is | 1 London | 2 Rheims | 3 Paris | 4 Versailles
| 5 Brussels. ()

To answer this question one would write the number 3 between the brackets.

SECTION A

Answer Questions 1 and 2 in this section.

1. A word in the first column may mean approximately the same as the first of the two words which follow it in the same line; or it may mean approximately the same as the second of the two words; or approximately the same as both, or neither, of the two words. Indicate whether the word in capital letters means approximately the same as the first, the second, both or neither of the words which follow it by drawing a circle round 1, 2, B (for *both*) or N (for *neither*), as in this example:

BRAVE	foolhardy	courageous	1	2	B	N
(1) BANAL	commonplace	deadly	1	2	B	N
(2) BYRE	cow-house	coffin	1	2	B	N
(3) DEFT	skilful	dexterous	1	2	B	N
(4) DISINGENUOUS	stupid	sincere	1	2	B	N
(5) DISINTERESTED	uninterested	bored	1	2	B	N
(6) GARISH	decorated	gaudy	1	2	B	N
(7) ILLICIT	evoke	unlawful	1	2	B	N
(8) INFER	imply	insinuate	1	2	B	N
(9) NAUSEA	disgust	navigation	1	2	B	N
(10) OBDURATE	unyielding	relentless	1	2	B	N
(11) PANACEA	dose	perfection	1	2	B	N
(12) PERTINENT	respectful	relevant	1	2	B	N
(13) PHILISTINE	gigantic	alien	1	2	B	N
(14) QUELL	ask	subdue	1	2	B	N
(15) RABBLE	mob	radical	1	2	B	N
(16) SALIENT	prominent	conspicuous	1	2	B	N
(17) TALLY	correspond	wait	1	2	B	N
(18) UNAFFECTED	sincere	natural	1	2	B	N
(19) VICTUALS	organs	provisions	1	2	B	N
(20) WANTON	undisciplined	unrestrained	1	2	B	N

2. Read this passage, then answer the questions which follow it.

Philosophy and Politics.

(1) I want to consider the relation of philosophies to political systems as it has in fact existed. (2) A man's philosophy may have an intimate connection with the happiness or misery of large sections of mankind.

(3) The word "philosophy" is one of which the meaning is by no means fixed. (4) It has one sense when used to describe certain features of historical cultures, and another when used to denote a study or an attitude of mind which is considered desirable in the present day. (5) Philosophy, as pursued in the universities of the Western democratic world, is, at least in intention, part of the pursuit of knowledge, aiming at the same kind of detachment as is sought in science, and not required, by the authorities, to arrive at conclusions convenient to the government. (6) Many teachers of philosophy would repudiate, not only the intention to influence their pupils' politics, but also the view that philosophy should inculcate virtue. (7) This, they would say, has as little to do with the philosopher as with the physicist or the chemist. (8) Knowledge, they would say, should be the sole purpose of university teaching; virtue should be left to parents, schoolmasters, and churches.

(9) But this view of philosophy, with which I have much sympathy, is very modern, and even in the modern world exceptional. (10) There is a quite different view, which has prevailed since antiquity, and to which philosophy has owed its social and political importance.

(11) Philosophy, in this historically usual sense, has resulted from the attempt to produce a synthesis of science and religion, or, perhaps more exactly, to combine a doctrine as to the nature of the universe and man's place in it with a practical ethic inculcating what was considered the best way of life. (12) Its cosmological and ethical theories were closely interconnected: sometimes ethical motives influenced the philosopher's views as to the nature of the universe, sometimes his views as to the universe led him to ethical conclusions. (13) And with most philosophers ethical opinions involved political consequences: some valued democracy, others oligarchy; some praised liberty, others discipline. (14) The fundamental problem of ethics and politics is that of finding some way of reconciling the needs of social life with the urgency of individual desires.

(a) Sentence (4) refers to two senses of the word "philosophy". In which paragraph is the second of these two senses discussed? | 1. The first | 2. The second | 3. The third | 4. The fourth ()

(b) The author of the passage sympathizes with the view that philosophy should | 1. teach the good life | 2. meet the convenience of the government | 3. have important political consequences | 4. aim at the pursuit of knowledge in a detached frame of mind ()

(c) Which of the following inferences can be made from the passage?

1. The author is unsympathetic to virtue.
2. The author is unsympathetic to schoolmasters.
3. The author is unsympathetic to ethics.
4. The author is unsympathetic to democracy.
5. None of the above inferences. ()

(d) Which of the following words in the passage refers to "a doctrine as to the nature of the universe and man's place in it" (Sentence 11)? | 1. historical | 2. cosmological | 3. ethical | 4. political | 5. social .. ()

- (e) Write, in the spaces provided, the words which are missing from the following sentence.

The author shows that "A man's philosophy may have an intimate connection with the happiness or misery of large sections of mankind" (Sentence 2) because philosophy, in its historically usual sense, has included..... theories about the best way of life, and such theories affect people's..... values and the way they live together.

SECTION B

Answer THREE of the six questions in this section.

3. Read the following passage; then, without writing out a translation, answer the questions which follow it.

ὁ δὲ Δημοσθένης ἐχώρει ἐπὶ Αἰγίτιον καὶ κατὰ κράτος αἰρεῖ ἐπιών. ὑπέφευγον γὰρ οἱ ἄνθρωποι καὶ ἐκάθηντο ἐπὶ τῶν λόφων τῶν ὑπὲρ τῆς πόλεως. ἦν γὰρ ἐφ' ὑψηλῶν χωρίων ἀπέχουσα τῆς θαλάσσης ὀγδοήκοντα σταδίου μάλιστα. οἱ δὲ Αἰτωλοὶ (ἐβοήθησαν γὰρ ἤδη ἐπὶ τὸ Αἰγίτιον) προσέβαλλον τοῖς Ἀθηναίοις καταθέοντες ἀπὸ τῶν λόφων ἄλλοι ἄλλοθεν καὶ ἐσηκόντιζον, καὶ ὅτε μὲν ἐπιοῖ τὸ τῶν Ἀθηναίων στρατόπεδον, ὑπεχώρουν, ἀναχωροῦσι δὲ ἐπέκειντο. τέλος δὲ τραπόμενοι ἔφευγον οἱ Ἀθηναῖοι καὶ ἐσπίπτοντες ἐς χωρία ὧν οὐκ ἦσαν ἐμπειροὶ διεφθείροντο. καὶ γὰρ ὁ ἡγεμὼν αὐτοῖς τῶν ὁδῶν ἐτύγχανε τεθνηκώς. μόλις τε ἐπὶ τὴν θάλασσαν οἱ περιγεγόμενοι κατέφυγον. ὕστερον δ' ἐς τὰς Ἀθήνας ταῖς ναυσὶν ἐκομίσθησαν. Δημοσθένης δὲ περὶ Ναύπακτον καὶ τὰ χωρία ταῦτα ὑπελείφθη, τοῖς πεπραγμένοις φοβούμενος τοὺς Ἀθηναίους.

- (a) What do you learn from the passage about the position of Aegitium? Answer in English.
- (b) Aegitium fell to the Athenians | 1. after a long siege | 2. by treachery | 3. by storm | 4. by a ruse ()
- (c) Describe in English the tactics of the Aetolians.
- (d) Which words in the passage show that the Athenians were unfamiliar with the terrain through which their retreat lay?
- (e) How did the survivors return to Athens? | 1. Headed by Demosthenes | 2. Under their guide | 3. By forced marches | 4. In their ships ()
- (f) What did Demosthenes expect to receive from the people of Athens when they heard what had happened? | 1. Sympathy | 2. Praise | 3. Blame | 4. Promotion | 5. Reward ()

4. Read the following passage; then, without writing out a translation, answer the questions which follow it.

Proxime cum in patria mea fui, venit ad me salutandum municipis mei filius praetextatus. Huic ego "Studes?" inquam. Respondit: "Etiam." "Ubi?" "Mediolani." "Cur non hic?" Et pater eius (erat enim una atque etiam ipse adduxerat puerum): "Quia nullos hic praeceptores habemus." "Quare nullos? Nam vehementer intererat vestra, qui patres estis" (et opportune complures patres audiebant), "liberos vestros hic potissimum discere. Ubi enim aut iucundius morarentur quam in patria aut pudicius continerentur quam sub oculis parentum

aut minore sumptu quam domi? Quantum est ergo collata pecunia conducere praeceptores, quodque nunc in habitationes, in viatica, in ea quae peregre emuntur impenditis, adicere mercedibus? Nihil honestius praestare liberis vestris, nihil gratius patriae potestis. Educentur hic, qui hic nascuntur, statimque ab infantia natale solum amare, frequentare consuescant. Atque utinam tam claros praeceptores inducat, ut finitimis oppidis studia hinc petantur, utque nunc liberi vestri aliena in loca abeunt ita mox alieni in hunc locum confluant!"

- (a) Which of the following titles best fits the passage? | 1. Money should be provided for education. | 2. Children are best educated in a local school. | 3. Boarding-schools are best. ()
- (b) The son mentioned in the first sentence of the passage is being taught | 1. at a local school | 2. away from home | 3. privately ()
- (c) According to the passage, education should be financed | 1. by the local authority | 2. by parents clubbing together | 3. by the state ()
- (d) Which two words in the Latin indicate the correct answer to Question (c)?
- (e) The speaker recommends | 1. strict school discipline | 2. parental non-interference | 3. moral guidance by parents ()
- (f) The speaker's view is that | 1. "Absence makes the heart grow fonder" | 2. fondness for one's home-town is best fostered by being brought up in it. ()
- (g) Which sentence in the Latin indicates the right answer to Question (f)?
- (h) What is the modern name for the town named in the passage?
- (i) From which word in the Latin is derived an English word meaning "epithet"?
- (j) What inconsistency can you detect in the final sentence?

5. Read the following passage; then, without writing out the translation, answer the questions which follow it.

(1) J'aime à regarder de ma fenêtre la Seine et ses quais par ces matins d'un gris tendre qui donnent aux choses une douceur infinie. (2) J'ai contemplé le ciel d'azur qui répand sur la baie de Naples sa sérénité lumineuse, mais notre ciel de Paris est plus animé, plus bienveillant et plus spirituel. (3) Il sourit, menace, caresse, s'attriste et s'égaie comme un regard humain. (4) Il verse en ce moment une molle clarté sur les hommes et les bêtes de la ville qui accomplissent leur tâche quotidienne. (5) Là-bas sur l'autre berge, les forts du port Saint-Nicholas déchargent des cargaisons de cornes de bœuf et des coltineurs posés sur une passerelle volante font sauter lestement, de bras en bras, des pains de sucre jusque dans la cale du bateau à vapeur. (6) Sur le quai du Nord, les chevaux de fiacre, alignés à l'ombre des platanes, la tête dans leur musette, mâchent tranquillement leur avoine, tandis que les cochers rubiconds vident leur verre devant le comptoir du marchand de vin, en guettant du coin de l'œil le bourgeois matinal.

(7) Les bouquinistes déposent leurs boîtes sur le parapet. (8) Ces braves marchands d'esprit, qui vivent sans cesse dehors, la blouse au vent, sont si bien travaillés par l'air, les pluies, les gelées, les neiges, les brouillards et le grand soleil, qu'ils finissent par ressembler aux vieilles statues des cathédrales. (9) Ils sont tous mes amis et je ne passe guère devant leurs boîtes sans en tirer quelque bouquin qui me manquait jusque-là, sans que j'eusse le moindre soupçon qu'il me manquât.

Answer the following questions in English unless an answer in French is asked for.

- (a) How does the author personify the Paris sky?

- (b) *en ce moment* (Sentence 4): which moment is meant?
- (c) *quotidienne* (Sentence 4) means | 1. customary | 2. arduous
| 3. monotonous | 4. daily | 5. menial. ()
- (d) *les forts* (Sentence 5) means here | 1. forts | 2. cranes | 3. porters
| 4. cargo-boats | 5. trucks. ()
- (e) What do the cargoes consist of?
- (f) To which French word in the passage does the following definition apply:
"Ouvriers qui portent sur la tête, les épaules ou le cou de pesants fardeaux"?
- (g) Which two French words in the passage indicate that the author is not describing the Paris of to-day?
- (h) What kind of tree is mentioned in the passage?
- (i) What are the horses eating?
- (j) Why are the *cochers* (Sentence 6) said to be *rubiconds*?
- (k) *en guettant du coin de l'œil le bourgeois matinal* (Sentence 6): explain the reason for this action.
- (l) What do *bouquinistes* (Sentence 7) sell?
- (m) Where do they keep their wares?
- (n) What do they wear?
- (o) Why are they called *marchands d'esprit* (Sentence 8)?
- (p) Why are they said to resemble *vieilles statues des cathédrales* (Sentence 8)?
- (q) Why does the author frequently buy from them?
- (r) What seems to be one of the author's hobbies?

6. Read the following passage; then, without writing out a translation, answer the questions which follow it.

Fritz nahm die Zeitungen unter den Arm, zog die Hosen hoch und ging zu seinem Wolkenkratzer. Der war eigentlich noch kein Wolkenkratzer, sondern sollte erst einer werden. Nicht weit von dem Zeitungsplatz streckte sich das Gerippe von eisernen und stählernen Trägern und Schienen in die 5 Luft. Eine halbe Straße von Häusern war niedergerissen worden, um dem Koloß Raum zu schaffen. Er sollte das größte Gebäude New Yorks werden und damit der Welt.

Seit dem Niederreißen der Häuserreihe war kein Tag vergangen, an dem nicht Fritz mindestens eine halbe Stunde auf dem Bauplatz verbrachte. Er 10 kannte sie alle, von Mack, dem schwindelfreien Hocharbeiter, bis zu Billy von der großen Dampfmaschine. Er holte seinen Freunden gelegentlich eine Flasche Bier oder Pfeifentabak und erzählte ihnen Geschichten, wie er sie auf seinen Zeitungsgängen täglich erlebte und erzählen hörte. Für Fritz waren der Wolkenkratzer, die Wolkenkratzerleute, das ganze Getriebe voll 15 heißester Arbeitslust.

Ja, und er verkaufte täglich vierzig Zeitungen an seine Wolkenkratzerleute. Aber das war gänzlich Nebensache.

Heute stand er wie gewöhnlich an seinem Lieblingsplatz, einer hölzernen Plattform, die in das Netzwerk der Trägerschienen eingebaut war.

20 Plötzlich hörte er etwas und schrak auf. Vor ihm stand ein junger Mann, den er nicht kannte.

"Was machst du hier?" fragte der Mann.

"Ich darf hier sein," sagte er kurz.

25 "So? Weißt du auch, wie gefährlich das ist? Kleine Jungens sollten nicht hier herumklettern. Wer hat dir denn erlaubt, hierherzukommen?"

"Oh, alle! Billy und Mack—und ich verkaufe hier Zeitungen."

"Schön," sagte der Mann, "ich sehe dich wieder einmal. Guten Morgen."

Der Mann stieg flink und geschickt die schmale Leiter hinunter.

Fritz sah ihm nach. Er wußte nicht, daß dieser junge Mann einer der 30 berühmtesten Baumeister der Erde war und daß dieser werdende Wolkenkratzer seinem planenden Hirn entstammte und ihm gehörte.

(a) Which of the following statements is correct?

1. Fritz arbeitete an dem Wolkenkratzer.

2. Fritz besuchte den Wolkenkratzer.

3. Fritz besaß den Wolkenkratzer ()

(b) Das Gerippe ist | 1. eine Maschine | 2. ein Koloß | 3. ein Körperteil . . ()

(c) Wohnte jemand im Wolkenkratzer? | 1. Ja. | 2. Nein. ()

(d) Fritz liebte die Wolkenkratzerleute | 1. weil sie fleißig arbeiteten | 2. weil sie seine Geschichten gern hörten | 3. weil es viele von ihnen waren. . . ()

(e) Write down the German for each of the following words:

wooden; iron (*adj.*); steel (*adj.*).

(f) Give the meaning of each of the following words:

"schwindelfrei" (line 10); "Zeitungsang" (line 13); "flink" (line 28); "werdend" (line 30); "Hirn" (line 31); "entstammte" (line 31).

(g) Der junge Mann war | 1. ein Arbeiter | 2. ein Baumeister | 3. ein Fremder | 4. Billy ()

(h) Eine Leiter is a necessity for | 1. a writer | 2. a newsboy | 3. a builder . . ()

(i) Give the opposites of each of the following words:

"mindestens" (line 9); "gelegentlich" (line 11); "erlauben" (line 25); "verkaufen" (line 26); "hinuntersteigen" (line 28); "schmal" (line 28).

(j) Why did the man speak to Fritz? Answer in English.

(k) Translate into English the last sentence of paragraph 2, which begins "Für Fritz waren".

(l) Summarize the passage in about twenty-five English words.

7. In each part of this question, the first two words are related to one another. Two of the six words which follow them are related to each other in a similar way. Underline two of these six words which are related to each other in approximately the same way as the first two words, as in the following example:

tropics : arctic

heat temperature latitude longitude cold antarctic

(1) evidence : verdict

data crime court judge conclusion sentence

(2) invention : discovery

patent research creation treasure revelation exploration

(3) government : anarchy

democracy order police conspiracy revolution lawlessness

(4) dissemination : learning

propagation sterilization scattering memorization seed bacilli

- (5) instinct : habit
inheritance idiosyncrasy instantaneousness learning convention intelligence
- (6) unanimity : dissension
ascension animosity harmony debasement amity discord
- (7) analysis : synthesis
formula science division industry substitute union
- (8) scepticism : incredulity
credibility doubt superstition disbelief faith impossibility
- (9) motive : ability
power locomotive morality opportunity machinery mobility
- (10) childhood : childishness
infancy old age superannuation seniority venerability senility
- (11) orthodoxy : heterodoxy
truth virtue average vice deviation falsehood
- (12) egoism : altruism
personality self sanity others psychiatry truthfulness
- (13) natural : affected
inborn primitive artless artificial modified artistic
- (14) soliloquy : dialogue
solitude soloist loquacity monologue dialect orchestra
- (15) æsthetic : moral
pain beauty fable goodness lesson dentistry

8. "Language communicates feelings as well as facts: that is why it serves for poetry and propaganda as well as for science."

Discuss this statement, illustrating your answer where you can by examples.

PAPER II

2 hours

Answer FOUR questions, including one from Section A (Questions 1—4) and one from Section B (Questions 5—10).

You will find that Questions 1—3 require answers to be inserted in the spaces provided, whereas the other questions are to be answered on the blank pages of this answer-book. Additional sheets of paper will be supplied if you need them.

SECTION A

Answer at least ONE question from this section.

1. The following table provides the information needed to answer the questions which come after it.

Universities of Great Britain: Number of students in courses, 1938-51.

Academic years

	1938-9	1942-3	1943-4	1944-5	1945-6	1946-7	1947-8	1948-9	1949-50	1950-1
<i>Courses taken by students:</i>										
Arts, including Theology, Fine Art, Law, Music, Commerce, Economics and Education:										
Men:	14,841	4,761	3,464	3,904	10,466	18,944	23,022	25,028	25,106	24,509
Women:	7,533	7,691	8,111	8,770	10,815	11,829	12,195	12,119	12,137	12,279
Pure Science:										
Men:	5,815	4,158	4,034	4,472	6,269	9,263	11,234	12,843	13,614	13,862
Women:	1,846	1,923	2,023	2,311	3,040	3,253	3,310	3,256	3,303	3,306
Medicine:										
Men:	10,002	8,642	8,157	8,085	8,893	9,779	10,587	11,082	11,183	11,257
Women:	1,881	2,373	2,439	2,567	2,675	2,717	2,827	3,012	2,964	2,944
Dentistry:										
Men:	1,373	961	910	932	1,110	1,326	1,819	2,213	2,430	2,597
Women:	115	149	164	183	242	258	325	334	294	288
Technology, including Engineering, Applied Chemistry, Mining, Metallurgy, Architecture:										
Men:	5,199	4,879	4,894	5,036	6,008	8,474	9,857	10,620	10,709	10,384
Women:	89	145	188	181	276	293	289	264	224	207
Agriculture, including Forestry, Horticulture and Dairy Work:										
Men:	890	664	806	904	1,209	1,683	2,232	2,516	2,405	2,240
Women:	153	221	257	270	329	309	461	403	368	366
Veterinary Science:										
Men:	248	190	184	202	259	295	314	340	621	982
Women:	17	7	17	22	31	29	35	36	63	93

In the spaces provided, write the answers needed to complete the following sentences correctly. Give your answers to the first place of decimals.

- (1) The number of students in 1938-39 was _____, the number in 1950-51 was _____, an increase of _____ per cent.
- (2) In 1943-44, the number of women students was _____, the number of men students was _____, the total number was _____.
- (3) The percentage of students taking each type of course in 1950-51 was as follows:

Arts, etc.		Technology, etc.	
Pure Science		Agriculture, etc.	
Medicine		Veterinary Science	
Dentistry			
- (4) The number of students in the Arts group reached a maximum in the academic year 19____-____.
- (5) The percentage of students of medicine who were women increased between 1938-39 and 1950-51 by _____.

Given only the data in the table, each of the following statements may be certainly true, certainly false, probably true or probably false; or it may be indeterminate, i.e. one cannot say that it is certainly or probably true or false. In the brackets after each statement, write CT for "certainly true", CF for "certainly false", PT for "probably true", PF for "probably false", or Ind for "indeterminate".

- (6) The ratio of the number of women to the number of men in 1950-51 was highest in the Arts group of courses ()

- (7) The total number of students in 1943-44 was higher than the total number in 1938-39 ()
- (8) There were more than twice as many students of Dairy Work in 1946-47 as in 1938-39 ()
- (9) There were fewer women students at the Universities training to be teachers in 1950-51 than there were during the war ()
- (10) By the end of the war, twice as many women architects were being produced as before the war ()
- (11) The number of men studying Engineering reached its peak in 1949-50 ()
- (12) In 1950, there were about twice as many Engineering students as in the last year before the war ()
- (13) In 1937-38, there were fewer than 1,800 women students of Pure Science ()
- (14) The number of women students of Veterinary Science would reach 100 by 1951-52 ()
- (15) The number of students of Medicine in 1951-52 would be not less than 14,000 ()
- (16) The number of dentists who qualified in 1950-51 was 2,885 ()

2. A rectangular room is 30 ft. long, 18 ft. wide and 12 ft. high. It is to be equipped as a library. Two-thirds of each of the long walls and the whole of each of the shorter walls are to be lined with book shelves at an average cost of £2. 5s. per square yard of wall covered. The shelves will hold an average of 90 books per square yard of wall covered and the estimated average cost of the books is 17s. 6d. per volume. Four rectangular tables each 7 ft. 6 in. long and 3 ft. 9 in. wide and each costing £12. 5s. are to be provided and the total cost of the additional furniture and fittings is to be £98.

Answer the following questions. (Write the answers in the space provided at the right-hand side of the page. You need not show your working but you may use the blank page opposite and other blank pages for any working you wish to write down.)

- (1) What is the total area of the floor?
- (2) What fraction of the total floor space will be occupied by the tables? (Give your answer as a vulgar fraction in its lowest terms.)
- (3) What is the cost of fitting a carpet to cover the whole floor at £2. 5s. per square yard?
- (4) How many books will the shelves hold?
- (5) What is the estimated cost of these books?
- (6) What is the total estimated cost of equipping the library (including the books)?
- (7) If the money required is to be borrowed at $3\frac{1}{2}\%$ per annum Simple Interest, calculate, correct to the nearest £, the total interest for the first three years.
- (8) If the money required is to be obtained by levying a rate in a town whose rateable value is £1,200,000, calculate this rate in pence per £ of rateable value correct to 3 significant figures.

3. Directions.

There are recorded below five observations, 1 to 5, which have been made on the flowering of chrysanthemums, and eleven inferences, *a* to *k*, which have been drawn from these observations. In the first column on the right, opposite the list of inferences, you are to mark with a tick (✓) those inferences which you consider are justified by the observations quoted; with a cross (×) those which you think inconsistent with the observations, and with a nought (0) those

inferences which may or may not be true but do not follow from the observations quoted. For those inferences which you mark with a \checkmark or a \times , enter in the second column the number (or numbers) of the observations which led you to make this decision.

Observations.

1. Under natural conditions most kinds of garden chrysanthemum begin to flower in early autumn, but not before, however early in the year they may have been propagated and however favourable the season.
2. If for some weeks in the summer the chrysanthemums are taken into a dark room early every afternoon, they can be induced to flower as early as midsummer.
3. If chrysanthemums are artificially illuminated for a few hours after sunset each day, starting in the late summer, their flowering time can be indefinitely delayed.
4. If the chrysanthemums are illuminated for a few minutes in the middle of each night, flowering is delayed until this treatment is discontinued.
5. If the artificial illumination referred to in observations 3 and 4 is applied only to the buds, all leaf-bearing stems being boxed in a light-tight cover, the delay in the flowering period does not occur.

Inferences.

- (a) Chrysanthemums will not flower till the weather grows colder
- (b) Chrysanthemums will not flower till the hours of daylight begin to diminish
- (c) The flowering time of chrysanthemums is not affected by the time at which the plants were propagated
- (d) Chrysanthemums are prevented from flowering by exposure to artificial illumination
- (e) Chrysanthemums will not flower till the hours of darkness get longer . .
- (f) Chrysanthemums will flower if they are kept in the dark for more than fourteen hours each day
- (g) In order to flower chrysanthemums require a continuous period of darkness each night
- (h) The flowering of chrysanthemums is caused by the action of light on the buds
- (i) The flowering of chrysanthemums is prevented by the action of light on the leaves
- (j) The flowering of chrysanthemums is produced by something which happens in the leaves during darkness
- (k) The flowering of chrysanthemums is prevented by something which happens in the leaves during illumination

4. Many motorists believe that road visibility in a fog is improved if the car headlights are provided with yellow screens which extract the blue components from white light, leaving it predominantly yellow in colour. Among the reasons suggested for this belief are:

- (a) that the eye is more sensitive to yellow than to the other colours of the spectrum;
- (b) that yellow light is scattered by fog particles less than the blue colours of the spectrum;

- (c) that yellow light penetrates the fog better than white light;
 (d) that the effect is due simply to the reduction in the intensity of the headlight beam which results from putting a screen in it.
- (1) Quite apart from whether or not they may be correct statements of fact, *two* of these reasons are in themselves inadequate to explain the alleged result. Which two are these? And why are they inadequate?
- (2) The other two reasons, if correct statements of fact, would support the belief; whether or not they can explain the alleged result is a matter for experiment. Outline experiments which you would suggest (other than mere opinions derived from driving a motor car in a fog) to decide
- (i) whether they are correct statements of fact, and
 - (ii) whether either or both contribute to the supposed improvement in road visibility.

SECTION B

Answer at least ONE question from this section.

5. How far are the methods used by scientists applicable to the solution of problems not usually described as scientific, e.g. social problems?
6. Is it a sufficient justification for the work of a scientist that it increases human knowledge and understanding?
7. Give an account of the work of **one** of the following, explaining its importance: Charles Darwin, Euclid, Galileo, Lavoisier, Newton, J. J. Thomson.
8. Electronic computing machines are sometimes referred to as electronic brains. How far is the latter term appropriate?
9. Show how the elucidation of the life-history of the microscopic parasite carrying a particular disease (e.g. malaria, sleeping sickness) has assisted in reducing the incidence of the disease.
10. Give a short account of **one** of the following phenomena and its practical applications: (a) a vacuum, (b) infra-red radiation, (c) electro-magnetism, (d) thermal expansion of metals, (e) hydraulic pressure.

PAPER III

2 hours

Answer FOUR questions, including Question 1 and at least ONE question from each of Sections B and C.

SECTION A

1. Here are ten quotations from which certain words are missing. The missing words are indicated by numbers. Write the numbers (1) to (10) in your answer-book and after each number (i) write the word for which it stands and (ii) indicate as closely as you can the source of the quotation.

(a) ... government of the (1) by the (1) and for the (1)...

(b) The best-laid schemes o' (2) an' men
Gang aft agley.

(c) And now abideth faith, hope, (3), these three; but the greatest of these is (3).

(d) Never in the field of human conflict was so much owed by so many to so (4).

(e) Annual income twenty pounds, annual expenditure nineteen nineteen six, result (5).

(f) Man is by nature a (6) animal.

(g) They shall beat their swords into (7).

(h) All animals are (8), but some animals are more (8) than others.

(i) The rule is, (9) tomorrow and (9) yesterday—but never (9) to-day.

(j) We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, (10) and the pursuit of Happiness.

SECTION B

Answer at least ONE question from this section.

2. Give the title of an imaginary Act which you would like to be passed by Parliament. Explain the purpose of the Act and describe its main provisions.

3. State some of the chief subjects of disagreement between Great Britain and Russia at the present time.

4. What problems result from the immigration to this country of British subjects from the colonies? Suggest any ways you can of attempting to solve these problems.

5. Explain the meaning of one of the following: (a) inflation, (b) cost of living index, (c) the convertibility of sterling.

6. Should a nationalised industry be allowed to run at a loss?

7. To what extent do you think it possible to have "morals without religion"?

SECTION C

Answer at least ONE question from this section.

8. Suppose you are responsible for selecting a programme for a meeting of a sixth-form Record Club which has an ample choice of gramophone records of all kinds. What would you play, and why? Consider such ideas as unity and variety in constructing your programme.

9. Some people refer to a novel as a "story". Show the limitations of this view by indicating other elements of interest in novels. Illustrate your answer from particular novels.

10. How do "high comedy" and "low comedy" differ from one another? Illustrate your answer from at least two works (e.g. plays, novels) which you have read.

11. What is meant by "imagery" in poetry? How does it affect the reader? Illustrate your answer by quoting or referring to examples.

12. "Art is seldom or never strictly representational to the degree that a photograph is." Discuss this statement, referring to examples of works of art which vary in the degree to which they are representational.

13. Improved methods of printing reproductions of pictures may make excellent reproductions almost as cheap as books. Choose two or three pictures of which you would like to possess such reproductions and say why you choose them.