



SECONDARY EDUCATION
(SCOTLAND).

LEAVING CERTIFICATE EXAMINATION

(INCLUDING DAY SCHOOL CERTIFICATE
(HIGHER) GENERAL PAPER).

EXAMINATION PAPERS
1931.

LONDON:
PRINTED AND PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE
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1931.

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- Education Authorities (Scotland) Grant Regulations, dated 1st July, 1929. S.R. & O., 1929, No. 618, S. 41. Price 2*d.*; post free 2½*d.*
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- Superannuation Scheme for Teachers, 1919. S.R. & O., 1919, No. 1105. Price 1*d.*; post free, 1½*d.*
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LEAVING CERTIFICATE EXAMINATION

(including Day School Certificate (Higher)
General Paper).

The Leaving Certificate Examination (including the General Paper set in connection with the award of the Day School Certificate (Higher)) is held annually by the Scottish Education Department. In 1931 it commenced on Monday, 23rd March.

Candidates must be pupils of a school at which, or in connection with which, the examination is held, and must have been in regular attendance at the school from January to the date of the examination.

EXAMINATION PAPERS

DAY SCHOOL CERTIFICATE
(HIGHER), 1931
GENERAL PAPER

Monday, 23rd March—10 A.M. to 12 NOON

*The value attached to each question is shown in brackets
after the question.*

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Write a Composition, to fill about a page and a half of your book, on *one* of the following :—

- (a) A Scottish River.
- (b) Elizabethan Sailors and their Exploits.
- (c) Summer Amusements at the Seaside.
- (d) My Favourite Study.

(30)

2. Read the following passage carefully and answer the questions that follow it :—

The Doctor's house was roomy, draughty, and inconvenient. Floors, doors, and rafters made a great variety of angles ; every room had *a particular inclination* ; the gable had tilted towards the garden, after the manner of a leaning tower, and one of the former proprietors had buttressed the building from that side with a great strut of wood, like the derrick of a crane. Altogether, it had many marks of ruin ; it was *a house for the rats to desert* ; and nothing but its excellent brightness—the window glass polished and shining, the paint well scoured, the brasses radiant, the very prop all wreathed about with climbing flowers—nothing but its air of *a well-tended smiling veteran, sitting, crutch and all, in the sunny corner of a garden*, marked it as a house for comfortable people to inhabit. In poor or idle management it would soon have hurried into decay. As it was, the whole family loved it, and the Doctor was never better inspired than when he narrated *its imaginary story* and drew the character of its successive masters, from the Hebrew merchant who had re-edified its walls after the sack of the town, and past the mysterious engraver of the inscriptions on the timber pillar supporting the dining-room roof, down to the long-headed, dirty-handed boor from whom he had himself acquired it at a ruinous expense. As for any alarm about its security, the idea had never presented itself. What had stood for centuries might well endure a little longer.

- (a) Describe in your own words (1) the exterior appearance of the Doctor's house, and (2) the interior. Who were its successive owners, and how did the Doctor regard it ? (14)
- (b) Explain the expressions printed in italics. (4)
- (c) Quote from the passage one example of a noun clause, one of an adverb clause, and one of an adjective clause. Expand into a clause the words " In poor or idle management." (4)
- (d) Give the precise meaning of the following words, as used in this passage : inconvenient, strut, very, comfortable, inspired, imaginary, successive, re-edified, long-headed, boor, security, centuries. (12)

(e) Choose any *six* of the words quoted in (d) ; show how each is built up, and give the force of the separate parts. (6)

3. EITHER (a) Describe the short sea-route from London to Calcutta, naming, in their order, ports of call and places of interest passed on the voyage.

OR (b) What advantages has Britain derived from its island position ? (15)

4. EITHER (a) What were the chief social and political reforms of the nineteenth century ?

OR (b) What were the main causes and results of the Civil War of the seventeenth century, *or* of the American War of Independence ? (15)

LEAVING CERTIFICATE EXAMINATION, 1931

ENGLISH

(INCLUDING LITERATURE AND HISTORY)

(FIRST PAPER (a)—COMPOSITION)

Monday, 23rd March—10 A.M. to 10.50 A.M.

The value attached to the question is shown in brackets after the question.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

Write a Composition, *not exceeding three foolscap pages in length*, on any *one* of the following subjects :—

(a) A character sketch of an old shepherd, *or* an old fisherman, *or* an old gardener, *or* an old pavement artist.

(b) Walking tours.

(c) What past age in Scotland would you most like to have lived in, and why ?

(d) Does every change in fashion necessarily imply an improvement in taste ? (35)

ENGLISH

(INCLUDING LITERATURE AND HISTORY)

(FIRST PAPER (b)—INTERPRETATION AND LANGUAGE)

Monday, 23rd March—11.5 A.M. to 12.45 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Read the following passage through and then answer the questions that follow it :—

“Although it may seem strange at first hearing, by reason that men’s minds are prepossessed with the notion of successive parliaments, I affirm that the grand or general council, being well chosen, should be perpetual: for so their business is or may be, and oft times urgent; the opportunity of affairs gained or lost in a moment. The day of council cannot be set as the day of a festival; but must be ready always to prevent or answer all occasions. By this continuance they will become every way skilfullest, best provided of intelligence from abroad, best acquainted with the people at home, and the people with them. The ship of the commonwealth is always under sail; they sit at the stern, and if they steer well, what use is there to change them, it being rather dangerous? Add to this, that the grand council is both foundation and main pillar of the whole state; and to move pillars and foundations, not faulty, cannot be safe for the building.

I see not, therefore, how we can be advantaged by successive and transitory parliaments; but that they are much likelier continually to unsettle rather than to settle a free government, to breed commotions, changes, novelties, and uncertainties, to bring neglect upon present affairs and opportunities, while all minds are in suspense with expectation of a new assembly, and the assembly, for a good space, taken up with the new settling of itself. After which, if they find no great work to do, they will make it, by altering or repealing

former acts, or making and multiplying new ; that they may seem to see what their predecessors saw not, and not to have assembled for nothing ; till all law be lost in the multitude of clashing statutes." (JOHN MILTON.)

(a) What does Milton regard as (1) the special advantages of having a permanent General Council ; (2) the special disadvantages of submitting to a succession of different parliaments ? State in not more than seven or eight lines what there is to be said on the other side.

(b) Give a *general* grammatical analysis of the passage from "After which, if they find " to " for nothing."

(c) Expand the two phrases " being well chosen " (line 4) and " not faulty " (line 18) into clauses.

(d) Point out the two metaphors in the first paragraph. How far do you think they strengthen Milton's argument ?

(e) Give the exact meaning of the following phrases, and the derivation of the words printed in italics :—

To *prevent* or answer all occasions ; best provided of *intelligence* from abroad ; successive and *transitory* ; in *suspense* with expectation ; clashing *statutes*.

(30)

2. Read the following verses carefully and then answer the questions that follow :—

- " Do not all charms fly
At the mere touch of cold philosophy ?
3 There was an awful rainbow once in heaven :
We know her woof, her texture : she is given
In the dull catalogue of common things.
Philosophy will clip an angel's wings,
Conquer all mysteries by rule and line,
8 Empty the haunted air, and gnoméd mine—
Unweave a rainbow." (JOHN KEATS.)

(a) Observing that Keats uses " philosophy " where we should now use " science," give the substance of the above in about a dozen words.

(b) What episode in Scripture is Keats thinking of in line 3 ?

(c) Explain line 8 fully.

(d) Explain "woof" and "texture": where is the metaphor repeated? Show its peculiar appropriateness.

(e) What is the metre of these verses? And why would you say that they were *not* written by Pope or one of his school? (17)

3. Point out what is faulty in the following sentences and rewrite them correctly:—

(a) While digging the foundations of the house, a piece of old wall was discovered which was either thought to be Roman or Saxon.

(b) No argument, political or otherwise, will convince me of the veracity of this statement.

(c) This is a characteristic which all dislike and is seldom or ever beneficial to its possessor.

(d) One's last year at school has a different effect upon us than what we often expect. (8)

4. Briefly define the following:—

Mock-heroic, euphony, journalese, spoonerism, rhetorical question;

and quote, invent, or refer to an example of each of them. (10)

ENGLISH

(INCLUDING LITERATURE AND HISTORY)

(SECOND PAPER—LITERATURE)

Monday, 23rd March—1.45 P.M. to 2.45 P.M.

All candidates should attempt THREE questions, and three only, of which No. 1 is compulsory.

The value attached to each question is shown in brackets after the question.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

[Answer the FIRST question and any TWO of the others.]

1. Read carefully the poems A and B printed below, and then compare them as regards (a) subject, (b) language, (c) metre and (d) the mood in which each was written.

A.

A Passer-By.

Whither, O splendid ship, thy white sails crowding,
 Leaning across the bosom of the urgent West,
 That fearest nor sea rising, nor sky clouding,
 Whither away, fair rover, and what thy quest?
 Ah! soon, when Winter has all our vales opprest,
 When skies are cold and misty, and hail is hurling,
 Wilt thou glide on the blue Pacific, or rest
 In a summer haven asleep, thy white sails furling.

I there before thee, in the country that well thou knowest,
 Already arrived am inhaling the odorous air:
 I watch thee enter unerringly where thou goest,
 And anchor queen of the strange shipping there,
 Thy sails for awnings spread, thy masts bare;
 Nor is aught from the foaming reef to the snow-capp'd, grandest
 Peak, that is over the feathery palms more fair
 Than thou, so upright, so stately, and still thou standest.

ROBERT BRIDGES.

B.

The Ship.

There was no song nor shout of joy,
 Nor beam of moon or sun,
 When she came back from the voyage
 Long ago begun;
 But twilight on the waters
 Was quiet and grey,
 And she glided steady, steady and pensive,
 Over the open bay.

Her sails were brown and ragged,
 And her crew hollow-eyed,
 But their silent lips spoke content
 And their shoulders pride;
 Though she had no captives on her deck,
 And in her hold
 There were no heaps of corn or timber
 Or silks or gold.

J. C. SQUIRE.

2. "I see all the pilgrims in the *Canterbury Tales* as distinctly as if I had supped with them at the Tabard in Southwark." (*Dryden.*)

How does Chaucer contrive to produce so vivid an impression? Illustrate by quotation or reference. (12)

3. What grounds have we for supposing, from Shakespeare's plays, that he was a lover of Nature and had lived in the country? (12)

4. In what different kinds of poetry does Burns excel? In which do you think he is most successful? Illustrate your answer by quotations. (12)

5. Give a short account of *any one* of the following:—*Comus, The Progress of Poesy, The Lyrical Ballads, Adonais, The Scholar Gipsy, Dauber.* (12)

6. Relate briefly *any one* scene that has particularly pleased you in any one of the following books, reproducing where you can any actual words or phrases that have struck you:—*Gulliver's Travels, The Rivals, Pride and Prejudice, Esmond, David Copperfield, Kidnapped.* (12)

7. Discuss Addison and Steele *either* as creators of imaginary characters *or* as critics of the social follies of their age. (12)

8. **Either** (a) Choose *any three* of the following and describe briefly the episodes in Scottish History which they illustrate:—*The Abbot, The Legend of Montrose, Old Mortality, Rob Roy, The Heart of Midlothian, Waverley.* (12)

Or (b) Compare Scott, Barrie and Neil Munro as delineators of Scottish life and character. (12)

9. Give a short account of *any one* of the following:—*Areopagitica, On American Taxation, Natural History of Selborne, Voyage of the Beagle, My Schools and Schoolmasters, Memoirs of a Fox-Hunting Man.* (12)

ENGLISH
(INCLUDING LITERATURE AND HISTORY)
(THIRD PAPER—HISTORY)

Monday, 23rd March—3 P.M. to 4 P.M.

All candidates should attempt THREE questions, viz., the question in Section A and two questions from Section B.

The value attached to each question is shown in brackets after the question.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

SECTION A.

This question should be attempted by all candidates.

1. Show *very briefly* the historical significance of *five* of the following:—The reign of Alfred the Great; the marriage of Malcolm Canmore; the rebellion against King John of England; the succession to the English throne after the death of Elizabeth; the revocation of the Edict of Nantes; the capture of Quebec; the discovery of gold in Australia; the battle of the Marne. (10)

SECTION B.

All candidates should attempt TWO questions from this Section. These may be taken from different Sub-sections, or both from the same Sub-section.

SUB-SECTION (1). EARLY PERIOD (55 B.C. TO 1485 A.D.).

2. In what ways did the Fall of the Roman Empire affect the history of the British Isles? (15)

3. Account for the failure of (a) Ethelred the Unready and (b) Harold Godwinson to resist invasions of England. (15)

4. What is meant by saying that David I was "the maker of historical Scotland"? What changes did he make in Church and State? (15)

5. What motives led Edward I to attempt the conquest of Scotland? How far had he achieved success when he died in 1307? (15)

6. Account for the failure of *one* of the following sovereigns:—The Emperor Henry IV, Richard II of England, James III of Scotland. (15)

7. How far may trade and commerce be regarded as part of the cause of *either* the Crusades *or* the Hundred Years' War? (15)

SUB-SECTION (2). MIDDLE PERIOD (1485–1763).

8. "The sixteenth century was a period of great rulers." Illustrate from the careers of *one* of the following:—Henry VII of England, James IV of Scotland, the Emperor Charles V. (15)

9. Give some account of the dissolution of the monasteries in (a) England, (b) Scotland, and estimate the effects upon social life. (15)

10. **Either** (a) Account for the popularity of Queen Elizabeth and the unpopularity of James VI and I and Charles I in England. (15)

Or (b) Show how religious questions were connected with *one* of the following:—

- (a) the Thirty Years' War;
- (b) the foundation of the American Colonies;
- (c) the outbreak of the Great Civil War;
- (d) the Revolution of 1688–9. (15)

11. Estimate the success of William III as a European statesman. (15)

12. Discuss *one* of the following topics:—

- (a) the Jacobite movement in Scotland, 1689–1746;
- (b) the opposition to Sir Robert Walpole;
- (c) the Methodist Revival. (15)

SUB-SECTION (3). MODERN PERIOD (1763–1931).

13. Give some account of important movements associated with the names of any *two* of the following:—John Henry Newman; Daniel O'Connell; Thomas Chalmers; Sir Robert Peel; Joseph Chamberlain. (15)

14. Trace the history of British Dominion *either* in Canada *or* in South Africa. (15)

15. Describe the career of any great man in this period whose name is associated *either* with exploration *or* with inventions. (15)

16. Give some account of the Irish Home Rule controversy. (15)

17. Trace the relations between France and Germany from 1870 to 1914. (15)

18. How did the conception of a League of Nations develop from the Great War? How far has this conception advanced since the Treaty of Versailles (1919)? (15)

19. What are the chief difficulties which complicate the problem of representative government in India to-day? (15)

L A T I N

LOWER GRADE

Friday, 27th March—10 A.M. to 12.30 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into English :—

Scipio describes his visit to the aged king Masinissa in Africa.

Ad Masinissam ut veni, complexus me senex conlacrimavit aliquantoque post suspexit in caelum et "grates" inquit "tibi ago, summe Sol, vobisque, reliqui caelites, quod ante quam ex hac vita migro conspicio in meo regno et his tectis P. Cornelium Scipionem, cuius ego nomine ipso recreor: ita numquam ex animo meo discedit illius optimi atque invictissimi viri⁽¹⁾

⁽¹⁾ Scipio Africanus (the conqueror of Hannibal), who is mentioned in the last sentence. His elder son adopted the Scipio who describes this visit.

memoria." deinde ego illum de suo regno, ille me de nostra re publica percontatus est, multisque verbis ille consumptus est dies. post autem regio apparatu accepti sermonem in multam noctem produximus, cum senex nihil nisi de Africano loqueretur omniaque eius non facta solum sed etiam dicta meminisset. (20)

2. Translate into English :—

The defeat and death of Catiline.

Sed ubi omnibus rebus exploratis Petreius⁽¹⁾ tuba signum dat, cohortes paulatim incedere iubet. idem facit hostium exercitus. postquam eo ventum est, unde a ferentariis⁽²⁾ proelium committi posset, maximo clamore cum infestis signis concurrunt : pila omittunt, gladiis res geritur ; maxima vi certatur. interea Catilina cum expeditis in prima acie versari, laborantibus succurrere, integros pro sauciis arcessere, omnia providere, multum ipse pugnare, saepe hostem ferire : strenui militis et boni imperatoris officia simul exsequabatur. Petreius, ubi videt Catilinam magna vi tendere, cohortem praetoriam in medios hostes inducit eosque perturbatos atque alios alibi resistentes interficit. deinde utrimque ex lateribus ceteros aggreditur. Manlius et Faesulanus in primis pugnantes cadunt. Catilina postquam fusas copias seque cum paucis relictum videt, memor generis atque pristinae suae dignitatis in confertissimos hostes incurrit ibique pugnans confoditur. (30)

⁽¹⁾ Commander of the troops opposing Catiline.

⁽²⁾ Skirmishers.

3. Translate into Latin :—

- (1) I have known him for many years.
- (2) It is to your interest to help them.
- (3) It is said that he always forgave his enemies.
- (4) He promised to return from Rome next day.
- (5) He ought to have returned the money yesterday.
- (6) These girls are often punished by their teacher for laziness.
- (7) Can you tell me what you will do in Britain ?
- (8) There are 24 windows in the one house, and 12 in the other. (24)

4. Give the Latin word (with its meaning) from which the principal part of each of the following words is derived (verbs need not be conjugated):—adequate, traitor, accumulate, penalty, property, unveil, noun, option, indent, (to) refrain, strict, immense. (6)

LATIN

HIGHER GRADE—(FIRST PAPER)

Friday, 27th March—10 A.M. to 12.30 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

Translate the following passages into English:—

1. *Cicero recalls the state of politics when he entered on his consulship.*

Ego qualem Kalendis Ianuariis acceperim rem publicam, Quirites, intellego, plenam sollicitudinis, plenam timoris; in qua nihil erat mali, nihil adversi quod non boni metuerent, improbi exspectarent; omnia turbulenta consilia contra hunc rei publicae statum et contra vestrum otium partim iniri, partim nobis consulibus designatis inita esse dicebantur. quae cum ego non solum suspicarer, sed plane cernerem—neque enim obscure gerebantur—dixi in senatu in hoc magistratu me popularem consulem futurum. quid enim est tam populare quam pax? qua non modo ei quibus natura sensum dedit sed etiam tecta atque agri mihi laetari videntur. quid tam populare quam libertas? quam non solum ab hominibus verum etiam a bestiis expeti atque omnibus rebus anteponi videtis. quid tam populare quam otium? quod ita iucundum est ut et vos et maiores vestri et fortissimus quisque vir maximos labores suscipiendos putet, ut aliquando in otio possit esse, praesertim in imperio ac dignitate. quin idcirco etiam maioribus nostris praecipuam laudem gratiamque debemus, quod eorum labore est factum ut impune in otio esse possemus. (35)

2. *Aeneas has been telling Dido how he unwittingly violated the tomb of the murdered Polydorus. In the following verses he explains how Polydorus came to be murdered, and then resumes his narrative.*

Hunc Polydorum auri quondam cum pondere magno
 infelix Priamus furtim mandarat alendum
 Threicio regi, cum iam diffideret armis
 Dardaniae cingique urbem obsidione videret.
 ille, ut opes fractae Teucrum et Fortuna recessit,
 res Agamemnonias victriciaque arma secutus
 fas omne abrumpit : Polydorum obruncat, et auro
 vi potitur. quid non mortalia pectora cogis,
 auri sacra fames !

postquam pavor ossa reliquit,
 delectos populi ad proceres primumque parentem
 monstra deum refero, et quae sit sententia posco.
 omnibus idem animus, scelerata excedere terra,
 linqui pollutum hospitium et dare classibus Austros.
 ergo instauramus Polydoro funus, et ingens
 aggeritur tumulo tellus ; stant manibus arae,
 caeruleis maestae vittis atraque cupresso.

(30)

3. *The Romans are victorious over the Samnites.*

Consul palatos per agros cum vidisset hostes, stationes infrequentes relictas, paucis milites adhortatus ad castra oppugnanda ducit. quae cum primo clamore atque impetu cepisset, pluribus hostium in tentoriis suis quam in portis valloque caesis, signa captiva in unum locum conferri iussit ; relictisque duabus legionibus custodiae et praesidii causa gravi edicto monitis ut, donec ipse revertisset, praeda abstinerent, profectus agmine instructo, cum praemissus eques dissipatos Samnites ageret, caedem ingentem fecit. nam neque quo signo coirent inter se neque utrum castra peterent an longiorem intenderent fugam, territis constare poterat ; tantumque fugae ac formidinis fuit, ut ad quadraginta milia scutorum—nequaquam tot caesis—et signa militaria cum eis quae in castris capta erant ad centum septuaginta ad consulem deferrentur.

(25)

LATIN

HIGHER GRADE—(SECOND PAPER)

Friday, 27th March—1.30 P.M. to 3.30 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into Latin prose :—

After the enemy had suffered much from the sword, famine and pestilence, they sued for peace ; but they refused to lay down their arms except under conditions, and their suit was rejected. It is said by the writers of the time that Augustus had more than once exhorted Tiberius to bring to an end a war which he suspected to have been prolonged for nothing but military glory. But Tiberius knew well enough how great was the hatred which the barbarians entertained towards the Roman government, and that they would rather die than yield. When at last Bato, the Dalmatian chieftain, was taken prisoner and was led into the presence of the imperator, he was asked what motive

ERRATUM :

Page 16, paragraph 3, line 10.

“ uturm ” should read “ utrum.”

Exam. Papers 1931,

2. Translate into Latin :—

(1) I have been intending for a long time to ask you when you returned.

(2) Were you not ashamed of the speech you delivered yesterday in the Senate-house ?

(3) In India lions were formerly so numerous that no one felt he was safe.

(4) The prisoners would be able to climb to the top of the wall, even if it were two feet higher.

2. *Aeneas has been telling Dido how he unwittingly violated the tomb of the murdered Polydorus. In the following verses he explains how Polydorus came to be murdered, and then resumes his narrative.*

Hunc Polydorum auri quondam cum pondere magno
 infelix Priamus furtim mandarat alendum
 Threicio regi, cum iam diffideret armis
 Dardaniae cingique urbem obsidione videret.
 ille, ut opes fractae Teucrum et Fortuna recessit,
 res Agamemnonias victriciaque arma secutus
 fas omne abrumpit : Polydorum obtruncat, et auro
 vi potitur. quid non mortalia pectora cogis,
 auri sacra fames !

postquam pavor ossa reliquit,
 delectos populi ad proceres primumque parentem
 monstra deum refero, et quae sit sententia posco.
 omnibus idem animus, scelerata excedere terra,
 linq̄i pollutum hospitium et dare classibus Austros.
 ergo instauramus Polydoro funus, et ingens
 aggeritur tumulo tellus ; stant manibus arae,
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 peterent an longiorem intenderent fugam, territis constare
 poterat ; tantumque fugae ac formidinis fuit, ut ad
 quadraginta milia scutorum—nequaquam tot caesis—et
 signa militaria cum eis quae in castris capta erant ad
 centum septuaginta ad consulem deferrentur.

(25)

LATIN

HIGHER GRADE—(SECOND PAPER)

Friday, 27th March—1.30 P.M. to 3.30 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into Latin prose :—

After the enemy had suffered much from the sword, famine and pestilence, they sued for peace ; but they refused to lay down their arms except under conditions, and their suit was rejected. It is said by the writers of the time that Augustus had more than once exhorted Tiberius to bring to an end a war which he suspected to have been prolonged for nothing but military glory. But Tiberius knew well enough how great was the hatred which the barbarians entertained towards the Roman government, and that they would rather die than yield. When at last Bato, the Dalmatian chieftain, was taken prisoner and was led into the presence of the imperator, he was asked what motive had induced him to revolt against the Romans, and why, after all hope was lost, he had fought on with such courage and ferocity. He replied, " It is your own doing, who send not dogs or shepherds to protect your sheep, but wolves to prey upon them." (40)

2. Translate into Latin :—

(1) I have been intending for a long time to ask you when you returned.

(2) Were you not ashamed of the speech you delivered yesterday in the Senate-house ?

(3) In India lions were formerly so numerous that no one felt he was safe.

(4) The prisoners would be able to climb to the top of the wall, even if it were two feet higher.

(5) It will make a great difference to you whether this is done on purpose, or by accident.

(6) So long as you leave for the country by the 5th of November, you will suffer no harm. (20)

GREEK

LOWER GRADE

Monday, 30th March—10 A.M. to 12.30 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into English :—

The Lacedaemonian ambassadors remind the Athenians of past history, and of their services to one another and to Greece.

Ἀνεμίμησκον τοὺς Ἀθηναίους ὡς αἰεὶ ποτε ἀλλήλοισ ἐν τοῖς μεγίστοις καιροῖς παρίσταντο ἐπ' ἀγαθοῖς· αὐτοὶ τε γὰρ ἔφασκαν τοὺς τυράννους συνεκβαλεῖν Ἀθήνηθεν, καὶ Ἀθηναίους, ὅτε αὐτοὶ ἐπολιορκοῦντο ὑπὸ Μεσσηνίων, προθύμως βοηθεῖν. ἔλεγον δὲ καὶ ὅσ' ἀγαθὰ εἶη, ὅτε κοινῶς ἀμφότεροι ἔπραττον, ὑπομιμνήσκοντες μὲν ὡς τὸν βάρβαρον κοινῇ ἀπεμαχέσαντο, ἀναμιμνήσκοντες δὲ ὡς Ἀθηναῖοί τε ὑπὸ τῶν Ἑλλήνων ἠρέθησαν ἡγεμόνες τοῦ ναυτικοῦ καὶ τῶν κοινῶν χρημάτων φύλακες, τῶν Λακεδαιμονίων ταῦτα συμβουλομένων, αὐτοὶ τε κατὰ γῆν ὁμολογουμένως ὑφ' ἀπάντων τῶν Ἑλλήνων ἡγεμόνες προκριθείησαν, συμβουλομένων αὖ ταῦτα τῶν Ἀθηναίων.

(20)

2. Translate into English :—

The morning of Socrates's last day in prison.

Ἐγὼ σοι ἐξ ἀρχῆς πάντα πειράσομαι διηγῆσασθαι. αἶψα γὰρ δὴ καὶ τὰς πρόσθεν ἡμέρας εἰώθεμεν φοιτᾶν παρὰ τὸν Σωκράτη, συλλεγόμενοι ἕωθεν εἰς τὸ δικαστήριον ἐν ᾧ καὶ ἡ δίκη ἐγένετο· πλησίον γὰρ ἦν τοῦ δεσμωτηρίου. περιεμένομεν οὖν ἐκάστοτε ἕως ἀνοιχθείη τὸ δεσμωτήριον· ἐπειδὴ δὲ ἀνοιχθείη, εἰσῆμεν. καὶ δὴ καὶ τότε πρωαίτερον συνελέγημεν· τῇ γὰρ προτεραίᾳ ἐπειδὴ ἐξήλθομεν ἐκ τοῦ δεσμωτηρίου ἐσπέρας, ἐπυθόμεθα ὅτι τὸ πλοῖον ἐκ Δήλου ἀφιγμένον εἶη. παρηγγείλαμεν οὖν ἀλλήλοις ἡκεῖν ὡς πρωαίτατα εἰς τὸ εἰωθός. καὶ ἤκομεν καὶ ἡμῖν ἐξεληθὼν ὁ θυρωρός, ὅσπερ εἰώθει ὑπακούειν, εἶπεν περιμένειν καὶ μὴ πρότερον παριέναι ἕως ἂν αὐτὸς κελεύσῃ. οὐ πολὺν δ' οὖν χρόνον ἐπισχὼν ἤκεν καὶ ἐκέλευεν ἡμᾶς εἰσιέναι. εἰσιόντες οὖν κατελαμβάνομεν τὸν μὲν Σωκράτη ἄρτι λελυμένον, τὴν δὲ Ξανθίππην ἔχουσάν τε τὸ παιδίον αὐτοῦ καὶ παρακαθημένην. ὡς οὖν εἶδεν ἡμᾶς ἡ Ξανθίππη, τοιαῦτ' ἄττα εἶπεν, οἷα δὴ εἰώθασιν αἱ γυναῖκες, ὅτι “ὦ Σώκρατες, ὕστατον δὴ σε προσεροῦσι νῦν οἱ ἐπιτήδαιοι καὶ σὺ τούτους.” καὶ ὁ Σωκράτης βλέψας εἰς τὸν Κρίτων, “ὦ Κρίτων,” ἔφη, “ἀπαγέτω τις αὐτὴν οἴκαδε.”

(30)

3. Translate into Greek :—

- (1) I see that you are wounded.
- (2) If he were to do it, I would punish him.
- (3) Have you not known me a long time?
- (4) Do not strike this dog.
- (5) Although I was present, I did not hear him.
- (6) The pain was so great that she died.
- (7) He has gone to tell the General what happened.

(14)

4. (a) Give the Greek words (with their meanings) from which the principal parts of the following words are derived (verbs need not be conjugated) :—

aphasia, problem, pantehnicon, hydraulic, peripatetic.

(b) Give the meaning of each of the following, and an English word derived from each :—

πράσσειν, πόλις, μόρφη, τέμνειν, γύνη.

(c) Translate into English :—

(i) οὐκ ἔστιν ἐφ' ἡμῖν ζῆν ἢ ἀποθνήσκειν.

(ii) ἔπαθε μείζω ἢ κατὰ δάκρυα.

(iii) πολλὰ ἔτη ἔστιν ἀφ' οὗ ἤλθεν.

(iv) τί μένεις ἐξὸν ἀπελθεῖν ;

(v) κακῶς ὑπ' αὐτοῦ ἔπαθεν.

(vi) τὸν δ' ἀπαμειβόμενος προσέφη πολύμητις Ὀδυσσεύς.

(16)

GREEK

HIGHER GRADE—(FIRST PAPER)

Monday, 30th March—10 A.M. to 12.30 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

Translate into English :—

1. *When the State is in danger, speech is required from the politician, but action from the people.*

Ἦδη τοίνυν τινὸς ἤκουσα τοιοῦτόν τι λέγοντος, ὡς ἄρα ἐγὼ λέγω μὲν αἰεὶ τὰ βέλτιστα, ἔστι δ' οὐδὲν ἄλλ' ἢ λόγοι τὰ παρ' ἐμοῦ, δεῖ δ' ἔργων τῇ πόλει καὶ πράξεως τινός. ἐγὼ δ' ὡς ἔχω περὶ τούτων, λέξω πρὸς ὑμᾶς καὶ οὐκ ἀποκρούσομαι. οὐδ' εἶναι νομίζω τοῦ συμβουλευόντος

ὑμῖν ἔργον οὐδὲν πλὴν εἰπεῖν τὰ βέλτιστα. καὶ τοῦθ' ὅτι τοῦτον ἔχει τὸν τρόπον, ῥαδίως οἶμαι δείξειν. ἴστε γὰρ δήπου τοῦθ', ὅτι Τιμόθεός ποτ' ἐκεῖνος ἐν ὑμῖν ἐδημηγόρησεν ὡς δεῖ βοηθεῖν καὶ τοὺς Εὐβοέας σώζειν, ὅτε Θηβαῖοι κατεδουλοῦντο αὐτούς, καὶ λέγων εἶπεν οὕτω πως· “εἰπέ μοι, βουλευέσθε,” ἔφη, “Θηβαίους ἔχοντες ἐν νήσῳ, τί χρήσεσθε καὶ τί δεῖ ποιεῖν; οὐκ ἐμπλήσετε τὴν θάλατταν, ᾧ ἄνδρες Ἀθηναῖοι, τριήρων; οὐκ ἀναστάντες ἤδη πορεύσεσθε εἰς τὸν Πειραιᾶ; οὐ καθέλξετε τὰς ναῦς;” οὐκοῦν εἶπε μὲν ταῦτα ὁ Τιμόθεος, ἐποιήσατε δ' ὑμεῖς· ἐκ δὲ τούτων ἀμφοτέρων τὸ πρᾶγμα ἐπράχθη. εἰ δ' ὁ μὲν εἶπεν ὡς οἶόν τε τὰ ἄριστα, ὥσπερ εἶπεν, ὑμεῖς δ' ἀπερραθυμήσατε⁽¹⁾ καὶ μηδὲν ὑπηκούσατε, ἄρ' ἂν ἦν γεγονός τι τῶν τότε συμβάντων τῇ πόλει; οὐχ οἶόν τε. (35)

⁽¹⁾ ἀπορραθυμεῖν = to shrink from exertion.

2. *The departure of the Athenian expedition from the Piræus for Sicily.*

Μετὰ δὲ ταῦτα θέρους μεσοῦντος ἤδη ἡ ἀναγωγὴ ἐγίνετο ἐς τὴν Σικελίαν. τῶν μὲν οὖν συμμάχων τοῖς πλείστοις καὶ ταῖς σιταγωγοῖς ὀλκάσι καὶ τοῖς πλοίοις καὶ ὅση ἄλλῃ παρασκευὴ συνείπετο πρότερον εἴρητο ἐς Κέρκυραν συλλέγεσθαι, ὡς ἐκεῖθεν ἀθρόοις τὸν Ἴόνιον κόλπον διαβαλοῦσιν· αὐτοὶ δ' Ἀθηναῖοι καὶ εἰ τινες τῶν συμμάχων παρῆσαν ἐς τὸν Πειραιᾶ καταβάντες ἐν ἡμέρᾳ ῥητῇ ἅμα ἕω ἐπλήρουν τὰς ναῦς ὡς ἀναξόμενοι. συγκατέβη δὲ καὶ ὁ ἄλλος ὄμιλος ἅπας, ὡς εἶπεῖν, ὁ ἐν τῇ πόλει καὶ ἀστῶν καὶ ξένων, τοὺς σφετέρους αὐτῶν ἕκαστοι προπέμποντες, οἱ μὲν ἑταίρους, οἱ δὲ υἰέας, καὶ μετ' ἐλπίδος τε ἅμα ἴοντες καὶ ὀλοφυρμῶν, ἐνθυμούμενοι ὅσον πλοῦν ἐκ τῆς σφετέρας ἀπεστέλλοντο. καὶ ἐν τῷ παρόντι καιρῷ, ὡς ἤδη ἔμελλον μετὰ κινδύνων ἀλλήλους ἀπολιπεῖν, μᾶλλον αὐτοὺς ἐσῆει τὰ δεινὰ ἢ ὅτε ἐψηφίζοντο πλεῖν.

3. **Either (a) or (b)**—

(a) *The funeral rites of Achilles, described to his shade by the shade of Agamemnon.*

Ἐπτά δὲ καὶ δέκα μὲν σε ὁμῶς νύκτας τε καὶ ἡμαρ
 κλαίμεν ἀθάνατοί τε θεοὶ θνητοὶ τ' ἄνθρωποι·
 ὀκτωκαιδεκάτῃ δ' ἔδομεν πυρί, πολλὰ δέ σ' ἀμφὶ
 μῆλα κατεκτάνομεν μάλα πίονα καὶ ἔλικας βοῦς.
 καίεο δ' ἔν τ' ἐσθῆτι θεῶν καὶ ἀλείφατι πολλῶ
 καὶ μέλιτι γλυκερῶ· πολλοὶ δ' ἥρωες Ἀχαιοὶ
 τεύχεσιν ἐρρώσαντο⁽¹⁾ πυρὴν πέρι καιομένοιο,
 πεζοὶ θ' ἰππιῆές τε· πολὺς δ' ὀρυμαγδὸς ὀρώρει.
 αὐτὰρ ἐπεὶ δὴ σε φλόξ ἤνυσεν Ἡφαίστοιο,
 ἡῶθεν δὴ τοι λέγομεν λεύκ' ὅστέ', Ἀχιλλεῦ,
 οἴνω ἐν ἀκρήτῳ καὶ ἀλείφατι· δῶκε δὲ μήτηρ
 χρύσειον ἀμφιφορῆα· Διωνύσοιο δὲ δῶρον
 φάσκ' ἔμεναι, ἔργον δὲ περικλυτοῦ Ἡφαίστοιο.
 ἐν τῷ τοι κεῖται λεύκ' ὅστέα, φαίδιμ' Ἀχιλλεῦ.
 ἀμφ' αὐτοῖσι δ' ἔπειτα μέγαν καὶ ἀμύμονα τύμβον
 χεύαμεν Ἀργείων ἱερός στρατὸς αἰχμητῶν
 ἀκτῆ ἔπι προὔχούσῃ, ἐπὶ πλατεῖ Ἑλλησπόντῳ. (30)

⁽¹⁾ ἐρρώσαντο = moved (intrans.).

(b) *Deianira, the wife of Heracles, has sent her husband a poisoned robe as a charm to win back his love. Hyllus, their son, returns with the news that his father is dying in torments, and reproaches his mother.*

ὀφθαλμὸν ἄρας εἶδέ μ' ἐν πολλῶ στρατῷ
 δακρυρροοῦντα, καὶ με προσβλέψας καλεῖ·
 ὦ παῖ, πρόσελθε, μὴ φύγῃς τοῦμὸν κακόν,
 μηδ' εἴ σε χρὴ θανόντι συνθανεῖν ἐμοί·
 ἀλλ' ἄρον ἔξω, καὶ μάλιστα μὲν με θεῶ
 ἐντᾶυθ' ὅπου με μή τις ὄψεται βροτῶν·
 εἰ δ' οἴκτον ἴσχεις, ἀλλά μ' ἔκ γε τῆσδε γῆς
 πορθμεῦσον ὡς τάχιστα, μηδ' αὐτοῦ θάνω·

τοσαῦτ' ἐπισκήψαντος, ἐν μέσῳ σκάφει
 θέντες σφε πρὸς γῆν τήνδ' ἐκέλσαμεν μόλις
 βρυχώμενον⁽¹⁾ σπασμοῖσι· καί νιν αὐτίκα
 ἦ ζῶντ' ἐσόψεσθ' ἢ τεθνηκότ' ἀρτίως.
 τοιαῦτα, μῆτερ, πατρὶ βουλεύσασ' ἐμῶ
 καὶ δρῶσ' ἐλήφθης, ὧν σε ποίνιμος Δίκη
 τίσαιτ' Ἑρινύς τ'. εἰ θέμις δ', ἐπεύχομαι·
 θέμις δ', ἐπεὶ μοι τὴν θέμιν σὺ προὔβαλες,⁽²⁾
 πάντων ἄριστον ἄνδρα τῶν ἐπὶ χθονὶ
 κτείνας', ὅποιον ἄλλον οὐκ ὄφει ποτέ. (30)

⁽¹⁾ βρυχᾶσθαι = to moan.

⁽²⁾ προβάλλειν = to spurn.

GREEK

HIGHER GRADE—(SECOND PAPER)

Monday, 30th March—2 P.M. to 4 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into Greek :—

When Minos, King of Crete, came to the island of Aegina, he was refused the assistance he needed, and he was hardly out of the harbour when Athenian ambassadors arrived, begging to be supplied with as many forces as were ready in the whole kingdom. These seem to have met with a very different reception, for, according to one of the Roman poets, Aeacus, who happened to be king at the time, addressed them in the most friendly manner possible. "Athens," said he, "which has benefited the whole of this country so much, is worthy of receiving whatever I and my

people can give. You who have been sent from Athens, and know what honour is paid to it here, ought not to have come here as suppliants, but should have told us at once what your countrymen wished; I assure you that you would have obtained it without entreaties." (35)

2. Translate into Greek :—

- (1) He was defeated, and lost half of his army.
- (2) She left no stone unturned to attain her object.
- (3) Plato and his followers have greatly benefited mankind.
- (4) Until I return, let the fight continue.
- (5) I would have bathed in the river, had the water not been so cold. (15)

3. Translate into English :—

- (1) ὀλίγου ἑμαυτοῦ ἐπελαθόμεν.
- (2) τριταῖος ἦλθεν.
- (3) ἡ εἰρήνη ἀναγκαιοτέρα ἢ καλλίων ἦν.
- (4) πόσου διδάσκεις; πέντε μῶν.
- (5) δεύτερος πλοῦς. (5)

FRENCH

LOWER GRADE

Thursday, 26th March—10 A.M. to 12.30 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into English :—

Les Sabots.

Nous aperçûmes bientôt des troupeaux de moutons sans berger, sous la garde de deux chiens noirs qui aboyaient avec effroi contre nous. Un peu plus loin, nous vîmes les cendres d'un feu au milieu du sentier. Le feu était éteint, mais il y avait à côté deux paires de sabots

de bois comme en portent les enfants du pays. Nous comprîmes que ces enfants, gardiens des troupeaux de leur chaumière, n'étaient pas bien loin ; nous supposâmes, ce qui se trouva vrai, qu'effrayés par le bruit des voix et les coups de fusil sous les arbres, ils s'étaient enfuis et cachés dans les bruyères sans avoir le temps de mettre leurs sabots. L'idée me vint de leur faire une surprise. Nous fîmes halte auprès des cendres du feu éteint ; mon mari plaça une pièce d'argent dans chacun des quatre sabots ; mes filles y ajoutèrent une poignée de bonbons qu'elles avaient emportés. Puis nous repartîmes en pensant à la surprise et à la joie des petits bergers fugitifs, quand, longtemps après que nous aurions passé, ils seraient assez rassurés, en n'entendant plus rien, pour revenir à leur poste et pour reprendre leurs sabots.

LAMARTINE. (25)

2. Translate into English :—

En Espagne, 1808.

Les trois cavaliers espagnols me crièrent de me rendre, mais, désirant conserver, autant qu'il me serait possible, les précieuses dépêches que le maréchal avait confiées à ma valeur, je continuai à marcher sans répondre ; alors les Espagnols, prenant leurs carabines, firent feu sur moi. Leurs balles frappèrent les rochers à mes pieds, mais aucune ne m'atteignit, la distance étant trop grande pour que le tir pût être juste ; je n'en fus pas ému, mais je m'effrayai en pensant que le bruit produit par les détonations des armes à feu allait attirer les paysans que le soleil levant appelait à leurs travaux. Je m'attendais donc à être assailli par les hordes des féroces habitants de ces montagnes.

Tout à coup j'aperçus, à une demi-lieue, une quinzaine d'hommes s'avancant au pas de course dans la vallée, en se dirigeant sur moi ! Ils portaient dans leurs mains quelque chose qui brillait au soleil ; je ne doutais pas que ce fussent des paysans armés de leurs bèches dont le fer reluisait ainsi.

MARBOT. (25)

3. Translate into French :—

I am very glad to see you all again after my long absence. When I was in France I often used to think of you and of the happy holidays we had spent together. I arrived at Southampton yesterday and I came here at

once. And here I am! Now, let us go into the garden and you will tell me all that you have been doing since last summer. Will you begin, Peter? Though you are only eight, you are very fond of relating your adventures. But remember that I don't always believe your stories. (15)

4. Translate into French :—

- (1) His brother died in London three years ago.
- (2) Don't forget to tell her that we leave for Paris to-morrow morning.
- (3) I bought three stamps at the post-office, but I lost them while I was playing in the street.
- (4) We should like to hear everything that happened.
- (5) He asked me to buy the car⁽¹⁾ he bought last week.
- (6) As soon as my brother comes back, I shall ask him where he has been.
- (7) We don't know the man who stole the dog, but we know where he lives. (15)

⁽¹⁾ car = automobile (fem.).

FRENCH

HIGHER GRADE—(FIRST PAPER)

Thursday, 26th March—10 A.M. to 12 NOON

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

Translate carefully, with due attention to English form and expression :—

1. Washington n'avait pas d'ambition ; sa patrie eut besoin de lui ; il devint grand pour la servir, par devoir plutôt que par goût, et quelquefois même avec un pénible effort. Les épreuves de la vie publique lui étaient amères ; il

préférerait l'indépendance de la vie privée et le repos de l'âme à l'exercice du pouvoir. Mais il accepta sans hésiter la tâche que lui imposait son pays ; et, en l'accomplissant, il ne se permit aucune complaisance pour en alléger le fardeau. Né pour gouverner, quoiqu'il y prît peu de plaisir, il disait au peuple américain ce qu'il croyait vrai, et maintenait, en le gouvernant, ce qu'il croyait sage avec une fermeté aussi inébranlable que simple, et un sacrifice de la popularité d'autant plus méritoire qu'il n'en était point dédommagé par les joies de la domination. Serviteur d'une république naissante, où l'esprit démocratique prévalait, il obtint sa confiance et assura son triomphe en soutenant ses intérêts contre ses penchants, et en pratiquant cette politique à la fois modeste et sévère, qui ne semble appartenir qu'au chef d'un sénat aristocratique placé à la tête d'un État ancien.

—Guizot. (25)

2.

Intérieur.

Lorsque l'on est encor petit et que vient l'heure
Où le jour n'est plus là sans qu'il fasse encor nuit,
Quelle joie ! Au dehors c'est l'hiver, le vent pleure ;
Au dedans le feu clair danse et flambe à grand bruit.

“ N'allumez pas encor la lampe. Chut ! silence !
Grand'mère, contez-nous l'Ogresse ou l'Oiseau bleu.”
Dans l'horloge de bois le tic-tac⁽¹⁾ se balance ;
Le grillon fait son cri, le chat dort près du feu.

La troupe des enfants, assise en rond, écoute.
Ah ! que ce conte est beau ! qu'il fait peur et plaisir !
Mais la soupe est fumante ; allons, quoi qu'il en coûte,
L'histoire s'entendra demain plus à loisir.

La lampe est arrivée en même temps. Tout brille.
Qu'il fait bon vivre autour de ces plats réchauffants,
Dans l'ordre et dans la paix de l'honnête famille,
A la table où vous rit une troupe d'enfants !

A la fin du repas, la nappe blanche ôtée,
Ils admirent, d'un œil quelquefois endormi,
La boîte de couleurs, le jour même achetée
Et le grand livre d'or, présent d'un vieil ami.

—Jean Aicard. (20)

(1) le tic-tac = le pendule.

3. **Either (a) or (b) :—**

(a) (*Porus, an Indian king, was defeated in battle and captured by Alexander the Great in 326 B.C. After the interview between the victor and his captive described by Racine in these lines Alexander restored his kingdom to him.*)

Porus.

Alexandre, il est temps que tu sois satisfait.
 Tout vaincu que j'étais, tu vois ce que j'ai fait.
 Crains Porus ; crains encor cette main désarmée
 Qui venge sa défaite au milieu d'une armée.
 Mon nom peut soulever de nouveaux ennemis,
 Et réveiller cent rois dans leurs fers endormis.
 Étouffe dans mon sang ces semences de guerre ;
 Va vaincre en sûreté le reste de la terre.

Aussi bien n'attends pas qu'un cœur comme le mien
 Reconnaisse un vainqueur et te demande rien.
 Parle : et, sans espérer que je blesse ma gloire,
 Voyons comme tu sais user de la victoire.

Alexandre.

Votre fierté, Porus, ne se peut abaisser ;
 Jusqu'au dernier soupir vous m'osez menacer.
 En effet, ma victoire en doit être alarmée,
 Votre nom peut encor plus que toute une armée ;
 Je m'en dois garantir. Parlez donc, dites-moi,
 Comment prétendez-vous que je vous traite ?

Porus.

En roi.

— *Racine.* (20)

(b) L'ombre et la source me charmèrent tellement que je me souvins de quelques tranches d'excellent jambon que mes amis de Montilla avaient mis dans le sac de mon guide. Je les fis apporter, et j'invitai l'étranger à prendre sa part du repas impromptu. S'il n'avait pas fumé depuis longtemps, il me parut vraisemblable qu'il n'avait pas mangé depuis quarante-huit heures au moins. Il dévorait comme un loup affamé.

Mon guide, cependant, mangeait peu, buvait encore moins, et ne parlait pas du tout, bien que depuis le commencement de notre voyage il se fût révélé à moi comme un bavard sans pareil. La présence de notre hôte semblait le gêner, et une certaine méfiance les éloignait l'un de l'autre sans que j'en devinasse positivement la cause.

Déjà les dernières miettes du pain et du jambon avaient disparu ; nous avions fumé chacun un second cigare ; j'ordonnai au guide de brider nos chevaux et j'allais prendre congé de mon nouvel ami, lorsqu'il me demanda où je comptais passer la nuit.

Avant que j'eusse fait attention à un signe de mon guide, j'avais répondu que j'allais à l'auberge du Corbeau.

—*Prosper Mérimée.* (20)

FRENCH

HIGHER GRADE—(SECOND PAPER)

Thursday, 26th March—2.15 P.M. to 4.15 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into French :—

Still further on they saw a bees' nest in a tree and it was so full of honey that it was running down the trunk. The two elder brothers wanted to light a fire at the bottom of the tree, so that they might drive the bees away and take the honey : but the little brother, the blockhead, as he was called, would not let them do so. "Leave the bees alone," he said, "I won't have them burned." At nightfall the three brothers reached a castle whose stables were full of horses changed into stone, but no one was to be seen. They went through all the rooms, and at last came to a door which was locked. In the middle of the door there was a little window, through which they could see into a room, and in it they caught sight of a little gray-haired man sitting before a table. Though they called him more than once, he did not seem to hear them. But suddenly he rose, came to them and, without saying a single word, led them to a table laden with meat and fruit and wine, and bade them eat and drink. Then, when they had finished their meal, he led them each to a different bedroom. (40)

2. Translate into French :—

- (1) I wonder if our cousins have arrived. We have not seen them yet. Perhaps they have come by the evening train.
- (2) We don't think he can win that prize, but we shall be very glad if he succeeds in doing so.
- (3) After reaching the top of the hill I looked everywhere, but could see no one.
- (4) Please tell them that we should have come to see them last night if it had not been raining.
- (5) Although my sister was very tired, she decided to walk home instead of waiting for the car. (15)

3. Write in French a short story based on the following summary, adding any details you consider appropriate. The story should be about one and a half times the length of your answer to Question 1, and should on no account exceed twice that length. Failure to comply with this instruction may lead to a loss of marks :—

Le Drapeau caché.

- (1) En 1870 les Allemands entrent dans un village alsacien. Le maire cache le drapeau de la mairie dans un grenier.
- (2) En 1890 quelques ouvriers sont en train de réparer le toit de la mairie. Ils découvrent le drapeau, l'embrassent et le remettent dans sa cachette.
- (3) En 1918 les Allemands se retirent ; des troupes françaises qui arrivent sont étonnées de voir un drapeau français flottant au-dessus de la porte de la mairie. (20)

FRENCH

HIGHER GRADE—(SECOND PAPER)

Thursday, 26th March—1.30 P.M. to 2 P.M.

This Paper must not be seen by any Candidate.

To be read out by the Teacher at 1.30 p.m. in the presence of the Supervising Officer.

To be written by the Candidates on the separate sheets provided, which must be collected before the Second French Paper is distributed.

DIRECTIONS FOR TEACHER.

1. Read the passage aloud distinctly and deliberately, but not slowly, the object being to bring out the meaning of the whole as clearly as possible. Observe the liaisons as marked.
2. Inform the candidates that they may not ask for the repetition of any word or phrase.
3. Dictate the passage slowly, repeating each group of words (as indicated by vertical lines) twice over, and pronouncing every word very distinctly. The punctuation should be indicated thus :—(.) 'un point,' (;) 'point virgule,' (,) 'virgule,' (:) 'deux points.'
4. After an interval of five minutes read the text over again in the same manner as on the first occasion, but do not on any account repeat separate words at the request of individual candidates.

DICTATION.

Sur la Mort d'un Ami.

La mémoire de mon ami | ne vit plus que dans mon
 cœur ; | elle n'existe plus | parmi ceux qui l'environnaient | et
 qui l'ont remplacé : | cette idée | me rend plus pénible |
 le sentiment de sa perte. | La nature, | indifférente au sort
 des individus, | remet sa robe brillante du printemps, |
 et se pare de toute sa beauté | autour du cimetière | où il
 repose. | Les arbres | se couvrent de feuilles | et entrelacent
 leurs branches ; | les oiseaux chantent | sous le feuillage ; |
 les mouches bourdonnent | parmi les fleurs ; | tout respire la
 joie | et la vie | dans le séjour de la mort ; | et le soir, | tandis
 que la lune | brille dans le ciel, | et que je médite |
 près de ce triste lieu, | j'entends le grillon | poursuivre
 gaiement | son chant infatigable, | caché dans l'herbe | qui
 couvre la tombe silencieuse | de mon ami. | L'homme n'est
 rien qu'un fantôme, | une ombre, une vapeur | qui se dissipe
 dans les airs. | Mais l'aube matinale | commence à blanchir
 le ciel ; | les noires idées qui m'agitaient | s'évanouissent
 avec la nuit, | et l'espérance | renaît dans mon cœur.

(10)

GERMAN

LOWER GRADE

Tuesday, 31st March—10 A.M. to 12.30 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing and for failure to use the German script in the answers to Questions 3 and 4.

1. Translate into English:—

Snowed up.

Der Winter hatte sich bis dann sehr mild gezeigt, nur selten schneite es, und der Frost dauerte nicht an. Nicht ohne Mühe und Gefahr erstieg Klaus den Abhang. Als er seine Hütte erreichte, lag der Schnee bereits einen halben Fuß hoch. Von der Anstrengung ermüdet, warf er sich auf sein Lager und schlief ein. Als er aufwachte, war noch alles dunkel, er legte sich auf das andre Ohr und schnarchte ruhig weiter. Er erwachte wieder; es war alles dunkel. „Will es denn heute gar nicht mehr Tag werden?“ rief er sich aufrichtend, „oder habe ich den Tag verschlafen, und es ist schon die Nacht angebrochen?“ Er zündete ein Streichholz an und hielt die Uhr an das Licht. „Eins!“ Das konnte aber auch eins nach Mitternacht sein. Zweifelnd hielt er die Uhr an das Ohr, sie war nicht stehen geblieben und tickte fleißig fort. Zugleich fühlte er Hunger und Durst wie noch nie, wenn er in der Frühe das Lager verließ. Er öffnete die Tür, die nach innen aufging — eine Schneemauer starrte ihm entgegen. „Ach so,“ meinte er, „das ist was anders,“ er griff zur Schaufel, die er für alle Fälle bereit hielt. Bald hatte er sich an das Licht emporgearbeitet. Das war ein Tag! Der Schnee fiel in so schweren Flocken, daß man kaum zwei Schritte weit sehen konnte.

2. Translate into English:—

A Little Girl sells Newspapers on Xmas Night.

Um die Straßenecken
Pfeift der rauhe Wind;
Sieh das Händchen strecken
Dort ein blaßes Kind:
„Abendblatt!“

Oben glänzen Lichter,
Strahlt der Weihnachtsbaum,
Strahlen die Gesichter
In dem warmen Raum:
Draußen ist es schaurig,
Wirbelt fein der Schnee,
Muß die arme Kleine
Dennoch weiter flehen:
„Abendblatt!“

Will denn keiner lenken
Heut' auf sie den Blick?
Ach, nur wenige denken
Heut' an Politik!
Und sind auch die Beine
Müd' vom langen Stehen,
Muß die arme Kleine
Dennoch weiter flehen:
„Abendblatt!“

Jetzt vom Glockenmunde,
Hoch vom alten Turm
Schallt die zehnte Stunde
Klagend durch den Sturm;
Oben tönt die Freude
In die Nacht hinaus—
Sie in dünnem Kleide
Schleicht betrübt nach Haus:
„Abendblatt!“

Frostig dort und düster ;
 Ach, kein Weihnachtsbaum !
 Bitterndes Geflüster
 Hält noch bang im Traum :
 „ Abendblatt ! ” (25)

3. Translate into German :—

(1) At what time do you get up in the morning ?
 About half past seven.

(2) He sat down beside me on the seat and read the newspaper.

(3) When they were in Scotland last summer it rained almost every day.

(4) Have you received the book I sent you ?

(5) We could not go to the theatre on Wednesday as we had to write several important letters. (15)

4. Translate into German :—

Last Tuesday our class made an excursion into the country. On the previous day each pupil gave the teacher 2 marks to buy the tickets. In my rucksack I took some bread and butter, chocolate and fruit. We reached the station early and stood in a row till the train arrived. During the journey we sang many songs. When the train stopped at a little village we got out and marched to a big field, where we played football. In the evening we returned home, tired but happy. (15)

GERMAN

HIGHER GRADE—(FIRST PAPER)

Tuesday, 31st March—10 A.M. to 12 NOON

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

Translate carefully, with due attention to English form and expression :—

1. *A Dark Deed.*

Gerade dort, mitten im Walde, wurde in der Frühlingsnacht zur Zeit des Vollmondes eine schreckliche Tat vollbracht. Ein Mann kniete auf einem andern, der leblos da lag. Eine Wolke verhüllte das Antlitz des Mondes: die Nachtigall hielt inne mit ihrem schmetternden Gesange, als der Knieende den Dahingestreckten aussuchte und alles, was er fand, zu sich steckte. Jetzt nahm er ihn auf die Schulter und wollte ihn an den Strom, der fernher rauschte, hinabtragen, um ihn dort zu versenken. Plötzlich blieb er stehen, keuchend unter der toten Last. Der Mond war herausgetreten und warf sein sanftes Licht durch die Stämme, und es war, als ob auf den Strahlen des Mondes die Töne eines herzerreißenden Liedes getragen würden. Ganz nahe blies ein Posthorn die Weise des Liedes: „Denkst du daran?“ Dem Tragenden war's, wie wenn die Leiche auf seinem Rücken lebendig würde und ihn erwürgte. Schnell warf er die Last ab und sprang davon, immer weiter und weiter. Endlich am Strome blieb er stehen und lauschte hin. Alles war still, und nur die Wellen flossen schnell dahin, als eilten sie fort von dem Mörder. Dieser ärgerte sich jetzt, daß er die Spuren seiner Tat nicht vertilgt hatte und sich von sonderbarer Furcht forttreiben ließ. Er eilte nun zurück, wandelte hin und her, bergauf und bergab; der Schweiß rann ihm von der Stirne; es war ihm, als ob er Blei in allen Gliedern hätte. Mancher Nachtvogel flog flatternd auf, wenn er so durchs Dickicht drang; aber nirgends fand er das Gesuchte.

(25)

2. *An Exile recalls his old Home.*

O Heimatdorf, in grüner Berge Schoß,
 Der Welt so klein—für mich so reich, so groß!
 Jahrzehnte sind's, daß dich mein Aug' nicht sah,
 Nun bringt ein Bild dich meiner Seele nah:

Da stehst du wieder vor mir, Haus an Haus,
Von ferne hör' ich deines Stroms Gebraus ;

Der Hirtenflöte melanchol'scher Klang,
Er schwebt wie einst das stille Tal entlang !

Aus blüh'nden Gärten winkt's mir traulich zu,
Die Blumen duften Seligkeit und Ruh' ;

Noch krönt der Eichwald deinen Felsengrat,
Noch zieht sich längs des Stroms mein Lieblingspfad—

Viel tausendmal ich träumend ihn beschritt,
Die Helden meiner Märchen gingen mit.

Mir ist, als säh' ich sie auch heut' dort ziehn,
Doch scheu, als wollten sie vor mir entfliehn ;

Und plötzlich fühl' ich's durch den Sinn mir wehn,
Als müßt' ich ein Verlor'nes suchen gehn,

Und suchend irre ich talaus, talein—
Umsonst ! Da faßt es mich wie dumpfe Pein—

Von Tränen wird mir Herz und Auge schwer :
Es war ein glücklich Kind—ich find's nicht mehr !

(25)

3. *A General with his back to the Wall.*

Der 18. Juni 1757 war der verhängnisvollste Tag in Friedrichs Leben. Dort begegnete ihm, was ihm noch zweimal in diesem Kriege den Sieg entriß : der Feldherr hatte seine Feinde zu gering geachtet, er hatte seinem eigenen tapferen Heere Übermenschliches zugemutet. Nach einer kurzen Betäubung hob sich Friedrich in neuer Kraft. Von allen Seiten stürmten die Gegner gegen sein kleines Land, mit jeder großen Macht des Festlandes mußte er in tödlichen Kampf treten, er, der Herr über nur vier Millionen Menschen und über ein geschlagenes Heer. Jetzt bewährte er sein Feldherrntalent, wie er sich nach schweren Verlusten den Feinden entzog und sie wieder

packte und schlug, wo man ihn am wenigsten erwartete, wie er sich bald dem einen, bald dem andern Heere entgegenwarf, unübertroffen in seinen Dispositionen, unerreicht als Führer seiner Truppen. So stand er, einer gegen fünf, gegen Österreicher, Russen, Franzosen, von denen jeder einzelne der Stärkere war, zu gleicher Zeit noch gegen Schweden und die Reichstruppen. Fünf Jahre lang kämpfte er so gegen eine ungeheure Übermacht, jedes Frühjahr in Gefahr, allein durch die Massen erdrückt zu werden, jeden Herbst wieder befreit. Ein lauter Ruf der Bewunderung und des Mitgefühls ging durch Europa.

(20)

 GERMAN

HIGHER GRADE—(SECOND PAPER)

Tuesday, 31st March—2.15 p.m. to 4.15 p.m.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing and for failure to use the German script in the answers to Questions 1, 2 (a) and 3.

1. Translate into German :—

The youth wandered along, and after a time reached a castle, where he asked for a night's lodging. "Yes," said the lord of the castle, "if you will spend the night down below in the old tower you may go in; but I warn you it is very dangerous, for it is full of fierce dogs, which bark and howl at every one, and at certain hours a man must be thrown to them, whom they immediately devour. On account of them the whole country is in terror and distress, and yet they can not be banished." But the youth was without fear and said, "Let me get down to the barking

dogs, and give me something to throw to them ; they won't touch me." As nothing else would content him, the lord gave him food for the fierce animals, and took him down to the tower. When he entered, the dogs did not bark, but wagged their tails in quite a friendly manner round about him, and ate what he placed before them. The next morning, to every one's amazement, he came out of the tower, safe and sound. (35)

2. (a) Translate into German :—

- (1) After selling his business my friend was ordered by his doctor to live quietly.
- (2) You know quite well that you should not have done it.
- (3) On his arrival I asked him why he had not answered my letter.

(b) Translate into English :—

- (1) Das Betreten dieses Weges ist für Nichtberechtigte streng verboten.
- (2) Die Fahrgäste werden gebeten, während der Fahrt nicht mit dem Wagenführer zu sprechen. (10)

3. Write in German a continuous story based on the following summary. The story should be about one and a half times the length of your answer to Question 1 and should on no account exceed twice that length. Failure to comply with this instruction may lead to a loss of marks :—

Crow discovers piece of cheese—carries it off into neighbouring tree—hungry fox sees him—longs for cheese—resorts to flattery—invites crow to sing—crow lays cheese carefully on branch, then complies—fox departs in disgust—what he thinks of modern crows—gone are the good old days of Aesop ! (25)

(crow = die Krähe cheese = der Käse)

GERMAN

HIGHER GRADE—(SECOND PAPER)

Tuesday, 31st March—1.30 P.M. to 2 P.M.

This paper must not be seen by any Candidate.

To be read out by the Teacher at 1.30 P.M. in the presence of the Supervising Officer.

To be written by the Candidates on the separate sheets provided, which must be collected before the Second German Paper is distributed.

DIRECTIONS FOR TEACHER.

1. *Read the passage aloud distinctly and deliberately, but not slowly, the object being to bring out the meaning of the whole as clearly as possible.*
2. *Inform the Candidates that they may not ask for the repetition of any word or phrase, and warn them that marks will be deducted for failure to use the German script.*
3. *Dictate the passage slowly, repeating each group of words (as indicated by vertical lines) twice over, and pronouncing every word very distinctly. The punctuation should be indicated thus—(,) 'Komma', (.) 'Punkt', (;) 'Semikolon', (!) 'Ausrufungszeichen.'*
4. *After an interval of five minutes read the text over again in the same manner as on the first occasion, but do not on any account repeat separate words at the request of individual candidates.*

DICTATION.

Das Gewitter.

Das ist ein herrlicher Sommertag! | Das schönste
Erntewetter! | Die Sonne strahlt hoch und heiß | vom
wolkenlosen, blauen Himmel, | und die weiten Felder
schimmern | in reifem Korn. | Nun ist es Zeit zu mähen |
und die goldenen Garben zu binden; | und dann hinaus
mit den Pferden | und die Wagen voll geladen, | daß wir
die Ernte heimbringen, | ehe das Wetter sich ändert! |
Aber schon türmen sich weiße Wolken | am Horizont, |

höher und höher gleich schneeigen Bergen | und bald wie
drohende Riesenfäuste. | Schon bedecken sie die Sonne zu, |
dunkler wird der Himmel, | und mit einem Male | fährt
ein Windstoß | durch alle Eichen am Wege, | daß sie sich
rauschend biegen. | Die Vögel flattern erschrocken auf, |
und ein dumpfes Grollen rollt durch die Luft. (10)

GAELIC

LOWER GRADE

Tuesday, 31st March—10 A.M. to 12.30 P.M.

*The value attached to each question is shown in brackets
after the question.*

**N.B.—Begin each question on a fresh page. Write legibly
and neatly, and leave a reasonable space between the
lines. Marks will be deducted for bad writing and
spelling.**

1. Translate into English, paying careful attention to idiom:—

Bha aon de na féidh a bha, 'n a laogh, na bu lugha na
càch, agus lean e greis 'n a chranna-pheasan, ach le bhi
gléidheadh aghaidh na spàine ris bha e nis dlùth air cho mór
ri càch. Bha an creutair so cho làn char ris an t-sionnach.
Aon de na pratan a bhiodh e cluich 'nuair bhiodh e strì có
bu dlùithe gheibheadh do'n bhuachaille: sparradh e cheann
a stigh am measg chàich, agus cho luath is a bheireadh iad
uilleag dha, dhèanadh e sin 'n a leisgeul air son tuiteam
trasd air a' bhuachaille. Bheireadh am buachaille fadhar
no dhà air na h-aisnean aige, is phacadh e eadar a chasan e.
Cha bhiodh tuilleadh a dhùth air, is 'nuair a gheibheadh e e
féin a dhèanamh comhfhurtachail, shealladh e an àird mar
gum biodh e farraid "am fac thu cho tapaidh is a rinn mi
sud?" Ach air an latha so bha Tómas—oir b'e sin ainm—
cho mór, trom, is nan leiginn leis an cleas so chluich orm,
dh'fhaodainn a bhi dol dachaidh le mà-m-sic⁽¹⁾ am chuideachd.
Lagh iad sìos mu dheireadh, is thòisich cuid diubh air
cnàmh an cìr. (20)

D. MacKechnie: *Am Fear Cìvil.*

⁽¹⁾rupture, hernia.

2. Translate into English :—

Alba ar dùthaich, tìr aosd' nam beann arda,
 Alba ar dùthaich d'an tug sinn ar gràdh,
 Dh'aindeoin o d'chòrsan cho fada 's an téid sinn,
 Ar miann is ar dùil gus an ciarar ar là ;
 Bòidheach do bhruachan 's an dìthein 'g an còmhdach,
 Bòidheach do bheanntan 's am fraoch gu am bàrr,
 Gur tric bha sinn ceumadh do laganan uaine,
 'S a' sireadh nan neamhnad tha sgaoilte mu'n làr.
 Cùbhraidh do Chéitein aig ciaradh an fheasgair,
 Cùbhraidh do Shamhradh aig boillsgeadh an là,
 Cùbhraidh an anail a' boltradh gach taobh dhiom
 Bho bheul geal na mara 's i tilleadh gu tràigh ;
 Aluinn na frithean is miann le damh cròice,
 Is eilid 's na coireachan 's rùnaich 'g a càil,
 Spréidh air na gleanntan is laoigh òg ri guaineis,
 A' mireadh 's na cluaintean 's a' deoghal an sàth.

(20)

Angus Morrison : *Dàin agus Òrain.*

3. Translate into idiomatic Gaelic :—

The elder man sat with the rope of the sail in his hand, taking a shrewd squint at the weather at intervals. When not so engaged he was inclined to be talkative. "He is a very fine gentleman, Mr. MacIain, a very fine gentleman ; and very good to the poor." "I understand," I said, "that he is the most generous of mankind." "He is that ; he never lets a poor man go past his door without a meal. Maybe, sir, you'll be a friend of his ?" "Yes, both of us are friends of his and friends of his son, too." "Maybe you'll be a relation of his ?—he has many relations in the south country." "No," I said, "no relation, only a friend. Do you smoke ?" "Oh yes, but I have forgot my spleuchan." "I can provide you with tobacco," I said ; and so, when his pipe was lighted, he became silent. (20)

4. Write in Gaelic a continuous story, based on the following summary, and complete it in your own way. Give it a title. The story should be about one and a half times the length of your answer to Question 3, and should on no account exceed twice that length. Failure to comply with this instruction may lead to a loss of marks.

A studious Highland clergyman finds, to his regret, that books which he values highly have a way of being borrowed,

but not always returned—decides not to lend books in future. His neighbour, a witty and successful tacksman, given to reading, finds he has occasion to borrow a book from the clergyman—sends note. Clergyman declines, but invites farmer to come to manse and consult there any book he wishes. Farmer, disappointed, does not go. Winter comes—clergyman's peats badly dried, wont burn—he tries bellows—finds them holed and useless—decides to borrow his neighbour the farmer's—sends note. Farmer, remembering book episode, replies. (20)

(Complete the story in your own way.)

GAELIC

HIGHER GRADE—(FIRST PAPER)

Tuesday, 31st March—10 A.M. to 12 NOON

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into idiomatic English :—

An Nì a Chì na Big, is e Nì na Big.

Am measg nan laghannan d'am bheil an inntinn 'n a h-oibreachadh a' géilleadh chan 'eil aon, math dh'fhaoidte, a tha faighinn ùmhlachd cho iomlan, no aig a bheil uachdranachd cho farsuing, ris an lagh a tha an seanfhocal a' cur an cainnt. Tha tùs ar n-eòlais a' co-sheasamh anns a' chomas a tha aig an inntinn air aire a thoirt do chuspairean a tha cosmhail ri chéile, is an dà chuid, an coslas is an eucoslas, a ghléidheadh air chuimhne. Agus ceart mar a chì sinn gu bheil inntinn an fhir-chéird a' faighinn toileachais ann a bhi leantuinn a dhreuchd, mar a tha a làmh ag ionnsachadh teòmachd, tha gach slighe air an toir thu comas do'n inntinn a bhi siubhal a' fàs soilleir dith; agus a thuilleadh air so tha gach ceum a bheir thu anns an t-slighe a' dùsgadh suas iarrrtas air a bhi ag imeachd innte. Chì sinn mar so gu bheil a' bhuaidh bhunaiteach dhìomhair

so a' filleadh a stigh innte féin cumhachd a tha toirt barantas dhuinn air a seasmhachd.

Le cleachdain tha an t-saothair a' fàs taitneach, agus tha miann air a ghintinn 'san inntinn gu bhi buanachadh 'san t-saothair. Is ann do bhrìgh fìrinn na buaidh so a thuir an t-aon a bu doimhne a rannsaich inntinn an duine riamh, nach 'eil an deagh-bheus ach cleachdain. (25)

Professor D. Mackinnon : *An Gàidheal*.

2. Translate into English :—

An Cladh Chomhghain rugadh mise,
An Aird-a-Runnair chaidh mo thogail,
Fradharc a' chuain uaibhrich chuislich,
Nan stuadh guanach cluaineach cluicheach.

Measg Chlann Domhnaill fhuair mi m'altrum,
Buidheann nan seòl 's nan sròl daithte,
Nan long luath air chuaintean farsuing,
Aiteam nach ciuin rùsgadh ghlas-lann.

Na fir eòlach, stòilde, stàideil,
Bha 'san chomhstri stròiceach sgaiteach ;
Fir gun bhròn, gun leòn, gun airsneal,
Leanadh tòir is tòir a chasgadh.

Buidheann mo ghaoil nach caoin caitein,
Buidheann nach gann greann 'san aisith,
Buidheann shundach 'n am bhi aca,
Rùsgadh lann fo shranntaich bhratach.

Buidheann mhór 's am pòr nach troicheil,
Dh'fhàs gu meanmach, dealbhach, toirteil ;
Fearail fo'n airm, is mairg d'an nochdadh,
Ri h-uchd stoirm nach leanabail coltas.

Suidheam mu'n bhòrd stòilde, beachdail,
An t-sùil 'san dòrn nach òl a mach i,
Slàinte Shir Seumas thighinn dachaidh :
Aon Mhac Dhé mar sgéith d'a phearsa. (25)

Iain MacCodrum : *Sàr Obair nam Bard Gàidhealach*.

3. Translate into English, or turn carefully into Scottish Gaelic :—

Agus measaim gurab ionann dál do gach aon agus do'n cheithearnach allta aineólach a h-iarthar Mhumhan, do chuaidh i luing chogaidh d'iarraidh éadála ar fairrge, agus

do cuireadh i dtír i Sagsaibh iad ; agus an céad bhaile in-a dtarla i dtír iad, tángadar lucht an bhaile do dhéanamh lúthghára rompa agus d'a mbreith leó d'a dtighibh féin ré tabhairt ósda dóibh, oir fá lucht ósda an mhéid do bhí ag áitiughadh 'san mbaile sin ; agus fá h-iongnadh leis an gceithearnach iad ag a chuireadh féin, agus gan aithne ag aon duine dhíobh air. Do chuaidh féin agus drong do'n mhuintir do bhí mar-aon ris i dtigh duine aca ar ósda ; agus do bhádar muinntear an tigh gu ro-mhaith ris ar feadh seachtmhaine, ionnus gur mhaith leis an gceithearnach an dóigh ar a raibhe féin, ar ghlaire an áruis agus ar fheabhas a léaptha agus a bhídh agus a dhighe. Gidheadh ar mbeith dhó féin agus d'a chuideachtain ag gabháil a gceada, do ghairm an t-ósdóir an fear-cúntais do bhí aige, ag a rádh ris "make reckoning" .i. "déana cúntas." Leis sin táinig fear an chúntais, agus do ghabh ag feannadh an cheithearnaigh agus na muinntire do bhí maille ris, gur bh' a h-éigean dóibh uile díoluigheacht iomlán do thabhairt uatha, ionnus go rabhadar folamh ag imtheacht dóibh. (25)

Geoffrey Keating : *Three Shafts of Death.*

GAELIC

HIGHER GRADE—(SECOND PAPER)

Tuesday, 31st March—2.15 P.M. to 4.15 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing and spelling.

SECTION I.

All the questions in this Section should be attempted.

1. Write an essay, in Gaelic, on *one* of the following subjects :—

(a) Na goireasan a tha dualtach do shluagh dà-theangach.

(The advantages of being bilingual.)

(b) "Air àirigh aig sàil nam beann mór." (30)

2. Turn into idiomatic Gaelic :—
- (a) The small boys were told not to venture on the ice.
 - (b) These events took place in the ninth year of the reign of King Charles II.
 - (c) Few indeed there are nowadays who prefer work to sport.
 - (d) You little rascal, to stand there looking at the cows in the corn without stirring hand or foot to drive them out ! (10)
3. Translate carefully into English :—
- (a) Is feàrr freasdal na gàbhadh.
 - (b) Is feàirrde brà a breacadh gun a briseadh.
 - (c) Thig fear na h-iarraidh gun sireadh, ach fear nam fiach cha tig idir.
 - (d) Nam b'Eileanach mi gum b'Ìleach mi, is nam b'Ìleach mi gum bu Rannach mi. (10)

SECTION II.

THREE questions should be attempted from this Section.
The answers may be either in Gaelic or in English, except when otherwise indicated.

4. Give the Gaelic designation of the chiefs of the Frasers, Camerons, Campbells, MacDonalds of Glen Garry, MacDonalds of Clan Ranald. (5)

5. Locate and give English equivalents of any *five* of the following :—Clàr Sgìth, Gallaibh, An Eaglais Bhreac, Sàil Chinn-tìre, Ealasaid a' Chuain, A' Chearc Leódhsach, An Linne Shléiteach, A' Mhorbhairne. (5)

6. What historical events do you associate with any *five* of the following :—Domhnall a h-Ìle, Alasdair Mac Colla, Iain Lom, Iain Mùideartach, Eachann Ruadh nan Cath, Mac Mhaighstir Alasdair, Donnchadh Bàn ? (5)

7. Write down in Gaelic five mottoes typical of the Gaelic race and outlook. (5)

8. Suggest modern Gaelic terms for :—submarine (warship), telephone, Town Hall, Public Square, corkscrew, steamer gangway. (5)

GAELIC

HIGHER GRADE—(SECOND PAPER)

Tuesday, 31st March—1.30 P.M. to 2 P.M.

This paper must not be seen by any Candidate.

To be read out by the Teacher at 1.30 P.M. in the presence of the Supervising Officer.

To be written by the Candidates on the separate sheets provided, which must be collected before the Second Gaelic Paper is distributed.

DIRECTIONS FOR TEACHER.

1. *Read the passage aloud distinctly and deliberately, but not slowly, the object being to bring out the meaning of the whole as clearly as possible.*
2. *Inform the candidates that they may not ask for the repetition of any word or phrase.*
3. *Dictate the passage slowly, repeating each group of words (as indicated by vertical lines) twice over, and pronouncing every word very distinctly. The punctuation should be indicated.*
4. *After an interval of five minutes read the text over again in the same manner as on the first occasion, but do not on any account repeat separate words at the request of individual candidates.*

DICTATION.

An uair | a dhlùthaich sinn a stigh, | cha robh r'a
fhaicinn | ach croinn nan luingeas, | am brataichean a'
snàmh | gu fann ris an t-soirbheas; | is cha robh r'a
chluinntinn | ach farum ràmh | is torman nan allt agus
nan eas | a bha tuiteam | bho iomadh sgàirneach àrd |
do'n chalachd a bha nis | a' fosgladh gu farsuing romhainn.

Bho thaobh gu taobh de'n tràigh | air an dara làimh |
tha sràid de thighean móra | cho geal ris an t-sneachd; | is
gu grad air an cùl | tha uchdach chorrach chas, | far a bheil
an calltuinn, | an caorunn, | agus an t-uinnseann | a' fàs
gu dosrach, | cho dlùth, dìreach os cionn nan tighean |

a tha fópa | is gu bheil na geugan, | ar leat, | a' lùbadh
m'am mullach.

Air bràigh a' bhruthaich | chì thu a' chuid eile de'n
bhaile | eadar thu is faire, | ionnas gur duilich dhuit | àite
is bòidhche | agus is neo-chumanta fhaicinn. (10)

SPANISH

LOWER GRADE

Wednesday, 1st April—10 A.M. to 12.30 P.M.

*The value attached to each question is shown in brackets after
the question.*

**N.B.—Begin each question on a fresh page. Write legibly
and neatly, and leave a reasonable space between the
lines. Marks will be deducted for bad writing.**

1. Translate into English :—

Durante el sitio de Gibraltar, en el momento en que los ingleses esperaban de un instante a otro un ataque general, un centinela que habían colocado de noche a la entrada de la fortaleza, estaba al extremo de la muralla. Al lado de su garita tenía un puchero donde había ocultado su comida, que consistía en una sopa de habichuelas.⁽¹⁾ Una mona muy grande, (sabido es que la cima de esta roca está siempre cubierta de estos animales) llevada del olfato se acercó al puchero y metió su cabeza para regalarse con lo que contenía ; pero después que satisfizo su hambre, cuando quiso escaparse, no pudo sacar la cabeza, y se llevó el puchero por gorro, marchando con los pies de atrás. Esta terrible aparición apenas se presentó a los ojos del centinela, convirtió a la pobre mona en un granadero español ensangrentado. Ya exaltada su imaginación con esta idea, y lleno de miedo, disparó su fusil gritando con todas sus fuerzas que el enemigo había escalado la muralla. La guardia tomó al momento las armas con este aviso, el tambor resonó por todas partes, y en diez minutos estuvo toda la guarnición formada para la batalla. El supuesto granadero, a quien incomodaba mucho el sombrero, estuvo mucho tiempo sin ser descubierto, y su prisión restableció la tranquilidad en el campo que se había creído sorprendido.

(25)

⁽¹⁾ habichuelas = French-beans.

2. Translate into English :—

Mirad esta hormiga. Tendríamos que juntar veinte para que pesara un gramo y, no obstante, su cuerpecillo posee todos los órganos de la vida. En esta cabecita está concentrada en forma de instinto la tradición entera de las hormigas ; está provista de dos ojos excelentes, de fino olfato, de dos pinzas para roer y coger cosas, de antenas para investigar el tiempo, para informarse de los peligros posibles y, si se quiere, para hablar por señas. En el pecho están reunidos los órganos de la circulación, que, semejantes a nuestro corazón y a nuestros pulmones, mantienen la vida. Ahí también se asienta una grave fuerza, que se comunica a esas patitas, tan rápidas para correr, tan firmes para levantar cargas. La hormiga es una pequeña maravilla como organismo. (20)

3. Translate into Spanish :—

William : How are you, John ? Are you going to school this morning ?

John : No, William, not this morning, as we have a holiday.

William : What are you going to do ?

John : I am going to the country with my three sisters. The weather is fine and we all expect to enjoy ourselves very much. I am sorry that you are not free to come with us.

William : Yes, I wish we too had a holiday to-day, but never mind, the master has promised us one next week. We shall then go to the seaside to spend the day on the beach and we hope to be able to bathe.

John : Good-bye, I shall think of you working hard at school while we are playing in the fields.

William : Do not forget to come and see me when you return. I shall want to hear all about your excursion.

4. Translate into Spanish :—

- (1) He is not so old as his cousin.
- (2) She was not willing to give them to him.
- (3) We shall not go out for a walk if it rains.
- (4) This is the boy whose mother is so ill.
- (5) A fortnight ago we went to Madrid.
- (6) I hope you will learn to speak Spanish when you are a little older.
- (7) I cannot see your friend now. Please ask him to come the day after to-morrow. (15)

SPANISH

HIGHER GRADE—(FIRST PAPER)

Wednesday, 1st April—10 A.M. to 12 NOON

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

Translate, with due attention to English form and expression :—

1. Rendido el *Bucentauro*, todo el fuego enemigo se dirigió contra nuestro navío, cuya pérdida era ya segura. El entusiasmo de los primeros momentos se había apagado en mí, y mi corazón estaba lleno de un terror que me paralizaba, ahogando todas las funciones de mi espíritu, excepto la de la curiosidad. Esta era tan irresistible, que me obligó a salir a los sitios de mayor peligro. De poco servía ya mi escaso auxilio, porque ni aun se trasladaban los heridos a la bodega, porque eran muchos, y las piezas exigían el servicio de cuantos conservaban un poco de fuerza. Entre éstos estaba Marcial, que se multiplicaba gritando y moviéndose conforme a su poca agilidad, y era a la vez mariner, artillero, carpintero y cuanto había que ser en tan terribles instantes. Nunca creí que desempeñara funciones correspondientes a tantos hombres el que no

podía considerarse sino como la mitad de un cuerpo humano. Un astillazo le había herido en la cabeza, y la sangre, tiñéndole la cara, le daba el más horrible aspecto.

Lo que más me asombraba, causándome cierto espanto, era que Marcial, aun en aquella escena de desolación, profería algunas frases de buen humor, no sé si por alentar a sus decaídos compañeros, o porque de este modo acostumbraba alentarse a sí mismo. GALDÓS. (25)

2.

Las Campanas.

Yo las amo, yo las oigo,
cual oigo el rumor del viento,
el murmurar de la fuente
o el balido del cordero.

Como los pájaros, ellas,
tan pronto asoma en los cielos
el primer rayo del alba,
le saludan con sus ecos.

Y en sus notas, que van prolongándose
por los llanos y los cerros,
hay algo de candoroso,
de apacible y de halagüeño.

Si por siempre enmudecieran,
¡ qué tristeza en el aire y el cielo !
¡ qué silencio en las iglesias !
¡ qué extrañeza entre los muertos !

ROSALÍA DE CASTRO. (15)

3.

D. Diego. ¿ Qué haces aquí ?

D. Carlos. Mi desgracia me ha traído.

D. Diego. ¡ Siempre dándome que sentir, siempre !
Pero (*Acercándose a don Carlos*). ¿ Qué dices ? ¿ De
veras ha ocurrido alguna desgracia ? Vamos ¿ Qué
te sucede ? ¿ Por qué estás aquí ?

Calamocha. Porque le tiene a usted ley, y le quiere
bien, y

D. Diego. A ti no te pregunto nada ¿ Por qué
has venido de Zaragoza sin que yo lo sepa ? ¿ Por qué
te asusta el verme ? Algo has hecho : sé, alguna
locura has hecho que le habrá de costar la vida a tu pobre tío.

D. Carlos. No, señor, que nunca olvidaré las máximas de honor y prudencia que usted me ha inspirado tantas veces.

D. Diego. Pues, ¿a qué viniste? ¿Es desafío? ¿Son deudas? ¿Es algún disgusto con tus jefes? Sácame de esta inquietud, Carlos Hijo mío, sácame de este afán.

Calamocha. Si todo ello no es más que

D. Diego. Ya he dicho que calles Ven acá (*Tomandole de la mano se aparta con él a un extremo del teatro, y le habla a voz baja*). Dime que ha sido.

D. Carlos. Una ligereza, una falta de sumisión a usted. Venir a Madrid sin pedirle licencia primero—Bien arrepentido estoy, considerando la pesadumbre que le he dado al verme.

D. Diego. ¿Y qué otra cosa hay?

D. Carlos. Nada más, señor.

MORATÍN. (25)

SPANISH

HIGHER GRADE—(SECOND PAPER)

Wednesday, 1st April—2.15 P.M. to 4.15 P.M.

The value attached to each question is shown in brackets after the question.

N.B.—Begin each question on a fresh page. Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Translate into Spanish:—

A poor peasant went one day to the forest for some wood so that he might sell it and buy some bread for his children. On the way he found a purse with a hundred pesetas in it. The peasant needed the money and began to make plans for spending it. However, realising that the purse belonged to somebody, he was ashamed, and so he hid the purse and went to work in the forest. In the evening he had not sold the wood and there was no bread for his family.



The temptation was terrible but the peasant said to himself : " God who cares for the birds will care for my little ones." The next day he learned the name of the owner of the purse, who had offered a reward, and went to his house to give it to him. " Here is your purse," he said to the owner, who was a rich merchant. But the latter, not wishing to give the reward, said : " You have taken some of the money, for there were a hundred and twenty pesetas in it. You are a thief and I shall have you punished." The judge asked each of them to tell his own story. The peasant's account seemed so simple and true that he said to the merchant : " Evidently the purse is not yours as it contains only a hundred pesetas," and, turning to the peasant, he told him to keep the purse. " But," he added, " if you find one with a hundred and twenty pesetas in it, take it to the honest merchant who will no doubt give you the reward." (40)

2. Translate into Spanish :—

- (1) If I had enough money I would buy that watch.
- (2) Do not forget to give him this letter when he comes home.
- (3) How many times must I tell you not to do that ?
- (4) We were very busy yesterday, and consequently were not able to leave Madrid.
- (5) Although he is very rich he seldom looks happy. (15)

3. Write in Spanish a continuous story, based on the following summary. The story should be about the same length as your answer to Question 1, and should on no account exceed twice that length. Failure to comply with this instruction may lead to a loss of marks.

Plans for a day in the country—the journey by train—arrival and meeting of friends—a beautiful lake—party goes in a boat—a bathe—boy nearly drowned—saved by a friend—meal at mid-day—games in the afternoon—a sudden storm—tea at a cottage—the return journey and arrival home. (20)

SPANISH

HIGHER GRADE—(SECOND PAPER)

Wednesday, 1st April—1.30 P.M. to 2 P.M.

This Paper must not be seen by any Candidate.

To be read out by the Teacher at 1.30 P.M. in the presence of the Supervising Officer.

To be written by the Candidates on the separate sheets provided, which must be collected before the Second Spanish Paper is distributed.

DIRECTIONS FOR TEACHER.

1. *Read the passage aloud distinctly and deliberately, but not slowly, the object being to bring out the meaning of the whole as clearly as possible.*
2. *Inform the candidates that they may not ask for the repetition of any word or phrase.*
3. *Dictate the passage slowly, repeating each group of words (as indicated by vertical lines) twice over, and pronouncing every word very distinctly. The punctuation should be indicated thus:—(.) 'punto,' (,) 'coma,' (:)' 'dos puntos,' (;) 'punto y coma,' (i) 'principio de admiración,' (!) 'fin de admiración'.*
4. *After an interval of five minutes read the text over again in the same manner as on the first occasion, but do not on any account repeat separate words at the request of individual candidates.*

DICTATION.

Las bombas | surcan en todos sentidos | la obscura
 bóveda | del firmamento | con un silbido infernal, | como
 estrellas de fuego | dejando en pos de ellas | un largo rastro
 luminoso : | y si revienta alguna | en el aire, | se ven brotar
 de repente | brillantes ráfagas de luz | como en un fuego de
 artificio. | En medio | del silencio de la noche | retumban
 las explosiones | de un modo espantoso ; | frecuentemente
 las repite | el eco diferentes veces, | sobre todo | cuando
 algún proyectil repleto | de materias volcánicas | cae y
 revienta | en medio de los edificios. | ; O vosotros, | cuya
 sensibilidad está ya | completamente embotada, | como la
 de un paladar | abrasado por manjares ardientes | y licores

de fuego ; | vosotros que buscáis en vano | emociones de
 que no es susceptible | vuestra estéril alma ! | aquí las
 hallaríais, | no lo dudéis, | y harto violentas en verdad ; |
 porque, como ha dicho muy bien | un hombre de talento, |
 en este drama no se ve | lo que en los teatros : | aquí no
 vuelven | a hacer papel mañana | los muertos de hoy. |

(10)

MATHEMATICS

LOWER GRADE—(FIRST PAPER)

Tuesday, 24th March—10 A.M. to 12 NOON

Before attempting to answer any question, Candidates should read the whole of it very carefully, since time is often lost through misapprehension as to what is really required.

All the figures should be neatly drawn. All the steps of the proofs must be given. Preference will be given to proofs which depend on first principles, and in all cases it should be clearly shown on what assumptions the demonstrations are based.

The value attached to each question is shown in brackets after the question. Marks will be deducted for careless or badly arranged work.

SECTION I.

All the questions in this Section should be attempted.

1. The side AB of a triangle ABC is greater than the side AC . Prove that the angle ACB is greater than the angle ABC . (11)

2. In the triangle PQR the square on the side PR is equal to the sum of the squares on the sides PQ, QR . Prove that the angle PQR is a right angle. (12)

3. State and prove a construction for inscribing a circle in a given triangle. (11)

4. If two triangles are equiangular, prove that the sides containing equal angles are proportional. (12)

SECTION II.

Only THREE questions should be attempted from this Section.

The propositions in Section I (above) on which certain of these deductions depend are indicated in brackets.

5. The side AB of a triangle ABC is greater than the side AC . Prove that if D is any point between B and C in the side BC , AB is greater than AD . (Section I, 1.)

If D lay beyond C in BC produced, could any definite statement regarding the lengths of AB and AD be made? Give a reason for your answer. (18)

6. The lengths of the sides of a quadrilateral $ABCD$ are as follows :—

$$AB = 19.5 \text{ cm.}, \quad BC = 18 \text{ cm.}, \quad CD = 6 \text{ cm.},$$

$$DA = 4.5 \text{ cm.}; \text{ and the angle } BCA \text{ is a right angle.}$$

(a) Prove (arithmetically) that the angle CDA is also a right angle (Section I, 2); and

(b) Make an accurate drawing of the quadrilateral, stating your construction. A proof of the construction is not required. (18)

7. A circle is described touching the side QR of a triangle PQR at a point S between Q and R , and the other two sides produced.

Prove that the triangles PQS and PSR have equal perimeters. (18)

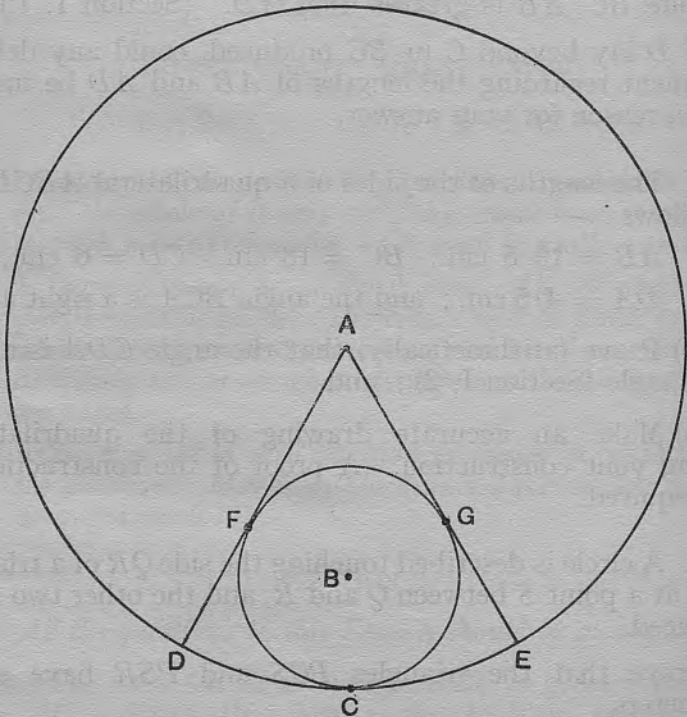
8. Prove that any straight line drawn from the vertex A of a triangle ABC to a point in BC is bisected by the straight line joining the mid-points of the sides AB , AC .

State (without further proof) the above result as a locus theorem. (18)

9. (See figure, which need not be copied in your examination book.) The smaller circle, whose centre is the point B , touches the larger one, whose centre is the point A , at C ,

and the two radii AD , AE at F and G . If the angle DAE is an angle of 60 degrees, prove that—

- (a) the angle ABG is an angle of 60 degrees ;
 (b) the radius of the larger circle is three times the radius of the smaller ;
 (c) the length of GE is $a \left(1 - \frac{1}{\sqrt{3}}\right)$, where a is the radius of the larger circle. (18)



MATHEMATICS

LOWER GRADE—(SECOND PAPER)

Tuesday, 24th March—1 P.M. to 3.30 P.M.

Before attempting to answer any question, Candidates should read the whole of it very carefully, since time is often lost through misapprehension as to what is really required.

Square-ruled paper and four-place logarithmic tables are provided.

All the working must be legible and shown in its proper position in the answer, and the different steps should be shortly indicated in words.

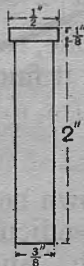
The value attached to each question is shown in brackets after the question. Marks will be deducted for careless or badly arranged work.

SECTION I.

All the questions in this Section should be attempted.

1. A man put £73 into the bank on deposit receipt at simple interest when the rate of interest was $2\frac{1}{2}$ per cent. per annum. After 180 days the rate was raised to 3 per cent. per annum, and he then deposited an additional £109 10s. If the rate remained at 3 per cent. during the rest of the year, find the total interest for the year. (10)

2. (See sketch given below.) Brass bolts are made with cylindrical shanks 2 in. long and $\frac{3}{8}$ in. in diameter, with flat round heads $\frac{1}{8}$ in. thick and $\frac{1}{2}$ in. in diameter. If a cubic foot of brass weighs 525 lb., find as nearly as your tables allow, the weight of 1,000 such bolts. (Take $\pi = 3.142$.) (15)



3. A farmer grows N acres of wheat, and the cost of tillage, sowing, reaping, etc., is £ P in all. The crop averages b bushels per acre, and he sells it at s shillings a quarter. What is his total profit? (8 bushels = 1 quarter.)

Work out numerically the case where he grows 136 acres at a cost of £845 6s. 8d., reaps a crop of 33 bushels per acre, and sells it at 36s. 6d. a quarter. (13)

4. (i) Simplify—

$$\frac{a^2 + b^2}{(a + b)^2} + \frac{\frac{2}{a}}{\frac{1}{a} + \frac{1}{b}}$$

(ii) Solve the equations—

$$(a) \quad \frac{x + y}{x - y} = \frac{5}{3}; \quad x + 5y = 36,$$

$$(b) \quad \frac{1}{x} - \frac{1}{7} - \frac{1}{8} = \frac{1}{x - 15}. \quad (14)$$

SECTION II.

Only THREE questions should be attempted from this Section.

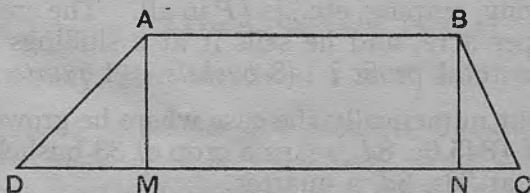
5. A car made a run of 195 miles in a certain time. If its average speed had been 4 miles per hour greater, it would have taken an hour less for the journey. How long did it take? (16)

6. The annual premium for life assurance of £100 for different ages of entry is given in this table (which you need not copy in your examination book):—

Age of entry ..	20	25	30	35	40	45	50
Premium, £ ..	1.60	1.83	2.08	2.39	2.80	3.35	4.08

Choosing any suitable scale, represent the relationship by means of a graph, and from it find the premiums for ages 28 and 37, expressing them in £ s. d. to the nearest threepence. (16)

7. In the trapezium shown below, which is not drawn to scale, AM and BN are perpendicular to AB . If $AB = 3\frac{1}{2}$ in., $DC = 4\frac{3}{4}$ in., $AD = 1\frac{5}{8}$ in., and angle $ADC = 56^\circ 35'$, calculate the lengths of AM , DM , and NC , and the area of the trapezium. (16)



8. (a) Prove, by complete factorization or otherwise, that—

$$(x^2 - 7x + 12)(x^2 + 7x + 12) = (x^2 - x - 12)(x^2 + x - 12) \\ = (x^2 - 16)(x^2 - 9).$$

(b) Prove that $2x + 3a$ is a factor of $4x^3 + 4ax^2 - 15a^2x - 18a^3$ and find the other factors. (16)

9. If $n = \frac{1}{2rl} \sqrt{\frac{Tg}{\pi d}}$, express T in terms of n, r, l, g, π, d , and evaluate T when $r = 0.05, l = 1.2, n = 700, d = 9, \pi = 3\frac{1}{7}, g = 32$. (16)

MATHEMATICS

HIGHER GRADE—(FIRST PAPER)

Tuesday, 24th March—10 A.M. to 12 NOON

Before attempting to answer any question, Candidates should read the whole of it very carefully, since time is often lost through misapprehension as to what is really required.

All the figures should be neatly drawn. All the steps of the proofs must be given. Preference will be given to proofs which depend on first principles, and in all cases it should be clearly shown on what assumptions the demonstrations are based.

Four-place logarithmic tables are provided.

The value attached to each question is shown in brackets after the question. Marks will be deducted for careless or badly arranged work.

SECTION I.

All the questions in this Section should be attempted.

1. A straight line touches a circle, and from the point of contact a chord of the circle is drawn. Prove that the angles between the tangent and the chord are respectively equal to the angles in the alternate segments. (11)

2. Prove that two triangles, ABC and DEF , are equal in area if the angle ABC is equal to the angle DEF , and $BA : ED = EF : BC$. (12)

3. If a straight line is perpendicular to a given plane, prove that every plane which contains the straight line is perpendicular to the plane. (11)

4. Prove, by means of a figure, that in any triangle—

$$b^2 + c^2 - a^2 = 2bc \cos A.$$
 (12)

SECTION II.

Only THREE questions should be attempted from this Section. The propositions in Section I (above) on which certain of these deductions depend are indicated in brackets.

5. A quadrilateral $ABCD$ inscribed in a circle has the two sides AB, AD equal. Prove that the circumscribed quadrilateral whose sides touch the circle at the points A, B, C, D has two of its angles equal. (Section I, 1.) (18)

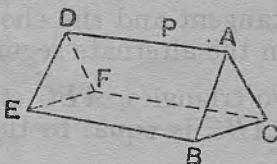
6. OP, OQ are the equal sides of an isosceles triangle POQ . R is a point in OP , and S a point in OQ produced. If the rectangle contained by OR, OS is equal to the square on OP , prove that the areas of the triangles POQ, ROS are equal.

State and prove a construction for making an isosceles triangle equal in area to, and with same vertical angle as, a given triangle. (Section I, 2.) (18)

7. Prove that two circles can be drawn to touch three straight lines when two of the lines are parallel. If the third line, $APQB$, meets the two parallel lines at the points A and B , and the two circles at the points P and Q , prove that AP equals QB . Hence (or otherwise) prove that the distance between the centres of the circles is equal to AB . (18)

8. (See rough sketch given below.) The ends ABC, DEF of a right triangular prism are isosceles triangles ($AB = AC$). Prove that the section PBC made by any plane passing through the edge BC is also isosceles.

If the section PBC is equilateral, and $AB = AC = 5''$, $BC = 8''$, calculate the lengths of AP and of the straight line joining A to the mid-point of BC . Hence find the angle between the planes ABC, PBC . (18)



9. Show that the angle θ between any two straight lines AB, CD in the same plane satisfies the relation—

$$AD^2 + BC^2 - AC^2 - BD^2 = \pm 2 AB \cdot CD \cos \theta.$$

Show that the result in Question 4 is a particular case of this. (18)

MATHEMATICS

HIGHER GRADE—(SECOND PAPER)

Tuesday, 24th March—1 P.M. to 3.30 P.M.

Before attempting to answer any question, Candidates should read the whole of it very carefully, since time is often lost through misapprehension as to what is really required.

Square-ruled paper and four-place logarithmic tables are provided.

All the working must be legible and shown in its proper position in the answer, and the different steps should be shortly indicated in words.

The value attached to each question is shown in brackets after the question. Marks will be deducted for careless or badly arranged work.

SECTION I.

All the questions in this Section should be attempted.

1. The inside length of a cistern is twice its inside width, and its depth is the same as its inside width. If the area of one of the square inside ends is $14 \cdot 0625$ square feet, find to the nearest gallon the amount of water it holds when full, assuming that a cubic foot of water weighs 1,000 ounces, and a gallon of water weighs 10 lb. (10)

2. In a certain year a duty of $4\frac{1}{2}d.$ per lb. on a commodity brought in a revenue of $\pounds 567,000$. The next year the duty was raised to $5\frac{1}{2}d.$ per lb., but 400 tons less were taxed. Find the revenue for this year. (10)

3. Find the values of the coefficients a and b if the expression—

$$x^5 + x^4 + ax^3 + bx^2 + 2x + 8$$

is exactly divisible by $x^2 - x + 2$.

Give the quotient when a and b have these values.

(11)

4. (a) Solve the equations—

$$2x^2 + 3y^2 = 11.$$

$$x^2 - xy + y^2 = 7.$$

(b) Prove that $x = \frac{c(a-b)}{a(b-c)}$ is a root of the equation

$$a(b-c)x^2 + b(c-a)x + c(a-b) = 0;$$

and find the other root. (13)

5. (a) Prove that in any triangle

$$\cos \frac{A}{2} = \sqrt{\frac{s(s-a)}{bc}}$$

(b) If $a = 31.4$, $b = 43.7$, $c = 56.2$, find all the angles of the triangle. (13)

6. (a) Prove that—

$$\tan^2(45^\circ + A) = \frac{\sec 2A + \tan 2A}{\sec 2A - \tan 2A}.$$

(b) Find the value of θ between 0° and 360° for which—

$$\cos \theta + \sin \theta = -\sqrt{2}. \quad (13)$$

SECTION II.

Only two questions should be attempted from this Section.

7. Draw the graph of $y = \cos x^\circ$ for values of x between 0° and $+180^\circ$.

On the same figure draw the *straight line* graph of

$$y = \frac{x^\circ}{240} - \frac{1^\circ}{4}.$$

Hence show that there is one root of the equation—

$$240 \cos x^\circ = x^\circ - 60^\circ$$

between $x = 0^\circ$ and $x = +180^\circ$; and give a rough estimate of this root to the nearest integer. (15)

8. (a) When are quantities p, q, r, s said to be in continued proportion?

If $p = 1.2$ and $s = 0.15$, find q and r .

(b) Show that if p, q, r, s are in continued proportion,
 $(q-r)^2 + (r-p)^2 + (s-q)^2 = (p-s)^2$. (15)

9. Find the sum of the first n whole numbers.

Show that this sum, the sum of the next n whole numbers, and again the sum of the next n , are themselves three numbers in arithmetical progression. (15)

10. Prove the formula for the radius of the circumscribing circle of a triangle in terms of the lengths of the sides and the area.

A railway track passing through points A and B , 32 chains apart, has to be in the form of a circular arc ACB , in order to round an obstruction at D in the straight line between A and B . If CD is 5 chains, DB is 7 chains, and CD is perpendicular to AB , find the radius of the track, correct to the nearest hundredth of a chain. (15)

ELEMENTARY ANALYSIS

ADDITIONAL MATHEMATICAL SUBJECT

(Higher Grade)

Wednesday, 25th March—10 A.M. TO 12.30 P.M.

Before attempting to answer any question, Candidates should read the whole of it very carefully, since time is often lost through misapprehension as to what is really required.

Not more than FOUR questions should be attempted from Section I, and not more than TWO questions from Section II.

Square-ruled paper is provided.

The value attached to each question is shown in brackets after the question. Marks will be deducted for careless or badly arranged work.

SECTION I.

Not more than FOUR questions should be attempted from this Section.

1. If the equations $ax^2 + bx + c = 0$, $px^2 + qx + r = 0$ have a common root, prove that

$$(br - cq)(aq - bp) = (ar - cp)^2.$$

(15)

2. Prove that the expression $\frac{(x-2)(2x-1)}{x}$ cannot lie between -1 and -9 for real values of x .

Draw the graph from $x = -1$ to $x = 2$. (15)

3. State De Moivre's theorem, and prove that if

$$x = \cos \theta + i \sin \theta, \text{ where } i^2 = -1, x^n + \frac{1}{x^n} = 2 \cos n\theta.$$

Show that, if n is a positive integer, $2^{n-1} \cos^n \theta = \cos n\theta + \frac{n}{1} \cos (n-2)\theta + \frac{n(n-1)}{1 \cdot 2} \cos (n-4)\theta + \dots$

What is the form of the last term? (15)

4. By using partial fractions, or otherwise, expand

$$\frac{5x - 7x^2}{1 - 2x - x^2 + 2x^3}$$

in a series of ascending powers of x ,

writing down the general term. Within what range of values of x is the expansion legitimate? (15)

5. Differentiate from first principles $\cos 2x$.

Differentiate $(3x + x^3) \log x$ and integrate $(x^2 - 1)^{-1}$ and $x^2 \cos x + 2x \sin x$. (15)

SECTION II.

Not more than TWO questions should be attempted from this Section.

6. Prove that the number of permutations of $a + b + c$ things, taken all at a time, of which a are alike, b others are alike, and c others are alike is

$$\frac{(a + b + c)!}{a! b! c!}.$$

In a box there are eight balls, of which three are white (and indistinguishable) and five are of other colours, all different. Prove that the number of ways of taking three balls at a single draw from the box is 26. (20)

7. What is meant by the convergence or divergence of an infinite series ?

Show that both the following series are convergent :—

$$(a) 1 + \frac{1}{4} + \frac{1.3}{4.8} + \frac{1.3.5}{4.8.12} + \dots;$$

$$(b) 1 - \frac{1}{2.2} + \frac{1}{3.2^2} - \frac{1}{4.2^3} + \dots$$

Find the sum to infinity of each series. (20)

8. Sketch the curves $y = \sin x$, $2y = \sin 2x$, upon the same diagram, for values of x between 0 and π . Verify analytically that the curves touch at the origin and do not meet again until $x = \pi$.

Show that the area enclosed by the curves between these limits is 2 square units. (20)

9. A window consists of a rectangle surmounted by a semicircle, and the perimeter of the window is a constant quantity. Show that for all shapes of the window conforming to these conditions the quantity of light admitted is a maximum, when the radius of the semicircle is equal to the height of the rectangle. (20)

GEOMETRY

ADDITIONAL MATHEMATICAL SUBJECT

(Higher Grade)

Wednesday, 1st April—10 A.M. TO 12 NOON

Before attempting to answer any question, Candidates should read the whole of it very carefully, since time is often lost through misapprehension as to what is really required.

Square-ruled paper is provided.

Marks will be deducted for careless or badly arranged work.

FIVE questions should be attempted, of which **TWO** at least must be from Section I. and **TWO** at least from Section II. The **FIFTH** question may be taken either from Section I. or from Section II. All the questions are of equal value.

SECTION I.

1. Prove that the equation of any straight line can be written in the form $x \cos \alpha + y \sin \alpha = p$; and find the length of the perpendicular from the point (x_1, y_1) on the straight line $ax + by + c = 0$.

Find the equations of the bisectors of the angles between the straight lines $3x + 4y = 7$, $12x + 5y = 17$.

2. Find the condition that the straight line $y = mx$ should touch the circle $x^2 + y^2 + 2gx + c = 0$.

Prove that the circles $x^2 + y^2 \pm 2ax + a^2 \cos^2 \theta = 0$ touch the straight line $y = x \tan \theta$. Prove also that they touch the straight lines $y = \pm a \sin \theta$. Show by means of a sketch the positions of the straight lines and the circles; and describe what happens to the two circles as a decreases, θ remaining constant.

3. (a) Prove that the two straight lines

$$(i) \quad my + x + am^2 = 0;$$

$$(ii) \quad y - mx + 2am + am^3 = 0$$

meet the parabola $y^2 = 4ax$ at a point P whose co-ordinates are $(am^2, -2am)$; and find the co-ordinates of the other point Q in which the second of these straight lines meets the parabola.

What do you infer about the relation of these two straight lines to each other and the curve?

(b) Prove that the diameter of the parabola which is at a distance $2a/m$ above the axis bisects the chord PQ .

4. Sketch the hyperbola $xy = c^2$ and show that it is symmetrical about the straight line $y = x$.

Find the equation of the chord of this hyperbola joining the two points (x_1, y_1) (x_2, y_2) in the form

$$x_1 x_2 y + c^2 x - c^2 (x_1 + x_2) = 0.$$

Hence deduce the equation of the tangent at the point (x_1, y_1) .

Hence also prove that the product of the perpendiculars on the y axis from the ends of any chord of a system of parallel chords of the above hyperbola is constant.

SECTION II.

5. Prove that the centres of the inscribed and escribed circles of a triangle form a system of four points such that each point is the orthocentre of the triangle formed by the other three points. Prove also that the radii of the circumcircles of these four triangles are equal.

6. A straight line meets the sides BC , CA , AB of a triangle ABC in the points P , Q , R . Prove that

$$\frac{BP}{PC} \cdot \frac{CQ}{QA} \cdot \frac{AR}{RB} = -1.$$

A straight line is drawn to cut the sides of a quadrilateral $ABCD$. If P , Q , R , S are respectively the points in which AB , BC , CD , DA are cut, prove that

$$\frac{AP}{PB} \cdot \frac{BQ}{QC} \cdot \frac{CR}{RD} \cdot \frac{DS}{SA} = 1.$$

7. Prove that the inverse of a circle with respect to a centre of inversion, which is not on the circle, is a circle.

Prove that any two circles which do not intersect can be inverted into concentric circles. If A and B are two circles, A being wholly inside B , and a system of circles can be described, each of which touches A and B and the adjacent circles of the system, then there is an unlimited number of such systems of circles.

8. The angle between the second and fourth rays of a harmonic pencil is a right angle. Prove that they are the bisectors of the angle between the first and third rays.

If A and B are two points inverse for a circle, and if AB cuts the circle in C and D , and P is any other point on the circle, prove that PC , PD are the bisectors of the angle APB .

9. Define conjugate points for a circle, and prove that if A , B are two conjugate points for a given circle, the circle on AB as diameter cuts the given circle orthogonally.

Prove that an infinite number of circles can be drawn to pass through a given point and cut a given circle orthogonally. Hence, or otherwise, show how to draw a circle to pass through a given point and cut two given circles orthogonally.

DYNAMICS

ADDITIONAL MATHEMATICAL SUBJECT

(Higher Grade)

Monday, 30th March—2 P.M. to 4 P.M.

Before attempting to answer any question, Candidates should read the whole of it very carefully, since time is often lost through misapprehension as to what is really required.

Square-ruled paper and four-place logarithmic tables are provided.

The value attached to each question is shown in brackets after the question. Marks will be deducted for careless or badly arranged work.

SECTION I.

All the questions in this Section should be attempted.

1. State and prove the proposition called the parallelogram of velocities.

To an observer on board a ship A sailing north at 8 miles per hour, another ship B appears to bear dead east. If during the next hour B continues to bear dead east, and its actual course is $22\frac{1}{2}^\circ$ north of east, find—

(a) at what rate B is sailing;

(b) the increase of distance between the ships at the end of the hour. (16)

2. Prove that the resultant of two unequal (like or unlike) parallel forces P and Q , acting at points A and B is a parallel force whose magnitude is the algebraic sum of P and Q , and whose line of action divides AB in a definite ratio.

From a horizontal rigid rod 2 feet long and weighing 1 lb., two weights of 2 lb. and 3 lb. are suspended, the former at a point 2 inches from the left hand end, and the latter at a point 3 inches from the right hand end. Find (a) where the rod must be supported on a knife-edge, so as to balance, and (b) the pressure on this edge. (16)

3. Assuming Newton's second law of motion, and any necessary kinematical truths, prove the two relations

$$Ft = mv, \text{ and } Fs = \frac{1}{2} mv^2,$$

where F is the force acting on the body.

A ball of mass 10 lb. falls vertically with a velocity of 200 feet per second into a mound of sand, and penetrates to a depth of 15 inches. Assuming that all the kinetic energy of the ball is expended in penetrating the sand, and neglecting the further effect of gravity after the ball enters the mound, find—

- (a) the average resistance exerted by the sand in pounds weight ;
- (b) the time taken to penetrate, assuming that the force has its average value throughout. (16)

4. State carefully the principle of Archimedes.

A cube of 6 cm. side and specific gravity 7.5 floats (with its base horizontal) partly in water, and partly in a liquid of specific gravity 13.6 underneath the water. If the depth of the water layer is 2 cm., to what depth is the cube immersed in the heavier liquid? (16)

SECTION II.

Only two questions should be attempted from this Section.

5. A light cord is attached to a mass of 3 lb., lying on a smooth inclined plane whose inclination to the horizon is 30° . The cord passes over a frictionless pulley at the top of the plane, and to its other end is attached a mass of 2 lb. free to descend vertically. The part of the cord between the 3 lb. mass and the pulley is parallel to the inclined plane.

- (a) Find the ratio of the acceleration to g .
- (b) Describe exactly what is meant by the "tension" in the cord, and find its value. (18)

6. A uniform ladder leans in a vertical plane against a vertical wall.

- (a) Prove that the horizontal component of the reaction between the ladder and the wall must equal in magnitude the friction between the ground (supposed horizontal) and the foot of the ladder.

- (b) If there is no friction between the top of the ladder and the wall, prove that W (the weight of the ladder) and F (the force of friction between the foot of the ladder and the ground) are connected by the equation

$$W = 2 F \tan \theta,$$

where θ is the angle the ladder makes with ground. (18)

7. Two reservoirs A and B of capacity 100 and 50 cubic feet respectively, are connected by a pipe (of negligible capacity) furnished with a stop-cock. The stop-cock is closed, and A is full of air at a pressure of 10 atmospheres, and B with air at a pressure of $2\frac{1}{2}$ atmospheres.

If the stop-cock is now opened—

- (a) What will the new pressure be?
- (b) What volume of air, measured at atmospheric pressure, will pass from A to B ?
- (c) Find the general expression for the new pressure, if a and b are the capacities and p and q the pressures of the reservoirs A and B . (18)

8. A pair of two-sheaved pulley blocks (second, or single-string, system of pulleys) are used for raising a load.

- (a) Make a diagrammatic sketch of the pulleys, and show how to find the mechanical advantage of the machine.
- (b) If the load is 3 cwts., and the efficiency of the machine 90 per cent., what vertically downward pull must a man exert to raise the load at a steady rate?
- (c) If the man weighs 12 stones, what is the greatest weight he can raise at a steady rate by means of the machine? (18)

BOOKKEEPING

Monday, 30th March—10 A.M. to 1 P.M.

The value attached to each question is shown in brackets after the question. In addition, 20 marks are allowed for writing and style.

1. Explain the following :—

Nominal Accounts, Assets, Bill of Exchange, C.I.F. (5)

2. In what way does a Trial Balance differ from a Balance Sheet and what is the object of each? (5)

3. What particulars would you expect to find in (a) a Bills Payable Book and (b) a Bills Receivable Book? (10)

4. From the following balances in the books of R. Roberts at 30th June, 1930, draw up a Trial Balance (find the Capital), and prepare Trading and Profit and Loss Accounts and a Balance Sheet :—

Sundry Creditors, £692 15s. 3d.; Horses and Carts, £110 17s. 6d.; Cash in hand, £155 7s. 3d.; Purchases, £4,398 4s. 8d.; Bills Payable, £350 10s. 6d.; Stock (1st January, 1930), £1,245 10s.; Bad Debts, £51 10s. 7d.; Sales, £4,171 10s. 9d.; Sundry Debtors, £1,238 19s. 1d.; Returns Outwards, £147 3s. 10d.; Bank Overdraft, £841 16s. 7d.; Salaries, £300; Wages, £275 14s. 8d.; Cash Discounts allowed me, £4 10s. 2d.; Returns Inwards, £52 9s. 5d.; Bank Interest (on Overdraft), £38 11s. 10d.; Rent and Rates, £63 9s. 4d.

Stock at 30th June, 1930, £2,096 9s. 3d. (30)

5. A. Arnold, with £10,000 in the Bank, purchased on 1st January, 1931, the business of R. Brown for £7,500. The Assets and Liabilities taken over were :—Stock of Goods (at valuation), £2,710 16s. 3d.; Business Premises, £3,500; Debtors—R. Robertson, £1,224 7s. 6d., S. Turner, £1,421 5s. 7d.; Creditor—M. Walter, £1,356 9s. 4d. In payment of the purchase price, he gave R. Brown a cheque for £5,000 and his acceptances at 1, 2, 3, 4 and 5 months respectively for £500 each.

His transactions during the month of January were :—
1931.

- Jan. 2. Paid Fire Insurance Premium by cheque
£12 10s. Drew £50 for Office Cash. Gave
Clerk Imprest of £5 for Petty Cash.
3. Paid M. Walter by cheque, £750. Cash
discount, £18 10s.
5. Received R. Robertson's bill at 1 mo.
for £500.
7. Sold goods to S. Turner for £736 5s. 5d.
Received his cheque for £500 on account.
8. Sold goods to B. Christie for £383 6s. 8d.
less trade discount 15 per cent.
9. Paid quarter's Telephone Account £15 in
advance.
10. S. Turner's acceptance for £1,000 at 2 mos.
received to-day.
12. Bought goods of J. Rogers, £496 10s. less
12½ per cent. trade discount.
13. R. Robertson compounds with his creditors.
Received cheque for amount due me at
rate of 6s. 8d. in the £.
15. Returned to J. Rogers goods not up to
sample, invoiced at £94 10s.
17. Bought goods of M. Walter, £743 10s. 8d.
19. Sold goods to E. Wormit, £291 17s. 10d.
21. Accepted M. Walter's draft for £1,050 at
2 mos. and paid balance of account by
cheque less 2½ per cent. discount.
22. E. Wormit returns goods invoiced at
£32 16s. 4d., wrong pattern.
23. Sent cheque to J. Rogers for amount of
account less 5 per cent. cash discount.
27. Sold goods to W. Bennett for £370 1s. 5d.
28. Received cheque from B. Christie in settle-
ment of account less 5 per cent. discount.
31. Petty expenses for month, £3 9s. 1d. Trade
Expenses, £28 7s. 4d.

All cheques were paid into Bank the same day.

Record the above in the necessary Books of Account, post to the Ledger and extract a Trial Balance. Bill Books and Petty Cash Book are *not* required.

N.B.—No Profit and Loss Account or Balance Sheet is to be prepared. (80)

COMMERCIAL ARITHMETIC

(FIRST PAPER)

Monday, 30th March, 2 P.M. to 2.30 P.M.

This paper will be taken up at the end of half-an-hour, when the second paper will be given out.

The sums are not to be copied out, and all the calculations required are to be performed mentally.

More importance will be attached to accuracy than to quickness.

The value attached to each question is shown in brackets after the question.

Fill this in first

Name of School.....

Name of Pupil.....

1. (a) Add :—
- | |
|------------------|
| 358742191 |
| 932657428 |
| 273459756 |
| 937688929 |
| 425376974 |
| 754923135 |
| 816119361 |
| 237675987 |
| <u>123867263</u> |

- (b) Multiply £34,421 1s. 7d. by 19..... (5)

2. Write down the values of the following :—

137.5×1.9

.209

1 ton at $1\frac{3}{4}d.$ per lb.....

$3\frac{3}{4}$ per cent. of £204 3s. 4d.....

52 articles at 8ls. per gross.....

(10)

3. Express :—

$\cdot 01875$ as a vulgar fraction in lowest terms

18s. 9d. as a decimal of £1.....

1 ton 5 cwt. 3 qrs. in lbs.....

5,249 kilometres \times 16 metres in square metres

(10)

COMMERCIAL ARITHMETIC

(SECOND PAPER)

Monday, 30th March—2.30 P.M. to 4 P.M.

Before attempting to answer any question, Candidates should read the whole of it very carefully, since time is often lost through misapprehension as to what is really required.

Four-place logarithmic tables are provided.

All the working must be shown in its proper position in the answer, and the different steps of the calculation should be shortly indicated in words.

Algebraical symbols may be used if properly explained.

The value attached to each question is shown in brackets after the question. In addition, 7 marks are allowed for neatness, arrangement and style.

1. If 1 centimetre equals 0.39 linear inch, and a cubic centimetre of mercury weighs 13.6 grams, find, correct to the nearest decigram, the weight of a cubic inch of mercury. (6)

2. Find the cost of a piece of land containing 4 acres, 3 square chains, 44 square yards at £121 per acre. (1 acre = 10 square chains, 1 linear chain = 22 yards.) (6)

3. The income and expenditure of a firm for 1929 were £18,600 and £15,500 respectively. In 1930 the income increased by $6\frac{1}{2}$ per cent., and the expenditure decreased by $1\frac{1}{2}$ per cent. By what percentage did the profits for 1930 exceed those for 1929? (9)

4. A bill for £2,082 10s. was discounted for me at the bank 73 days before its due date, the appropriate rate of interest being 7 per cent. per annum. What amount did I receive (to the nearest penny)? (9)

5. Find the percentage a merchant must add to the cost price of his goods to make a profit of 20 per cent. after allowing a cash discount of $7\frac{1}{2}$ per cent. (9)

6. A man's income is £1,341 derived one-half from investments and the other half from his earnings. The former is taxed at 4s. 6d. in the £1. From the latter, tax-free deductions to the total amount of £361 15s. are made, and £250 is taxed at 2s. in the £1, the remainder being taxed at 4s. 6d. in the £1.

Find his *whole* income tax, and the average rate per pound reckoned on his *whole* income (both to the nearest penny). (9)

7. An article which costs 7s. 6d. in London sells for 3.50 dollars in New York. Find, to the nearest penny, the profit that would be made by selling 1,000 articles in New York after adding 15 per cent. of the London price for freight and a further $33\frac{1}{3}$ per cent. of the London price for customs duty. (£1 = 4.85 dollars.) (10)

8. A merchant borrows £1,500 repayable not later than at the end of nine years with compound interest at 7 per cent. per annum. At the end of five years he repays £800. What further sum must he repay at the end of nine years to clear the debt completely? (Use logarithms.) (10)

SCIENCE

HIGHER GRADE—(BOTANY)

Tuesday, 31st March—2.15 P.M. to 4.15 P.M.

FIVE questions in all should be attempted.

Answers should, wherever possible, be illustrated by diagrams.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Describe the process of carbon assimilation as carried out by the plant, and outline a series of experiments to demonstrate the conditions necessary for carbon assimilation.

2. What are Stomata? Where are they found, how are they operated, and of what use are they to the plant?

3. Describe in detail how the stem of a woody Dicotyledon increases in thickness, and how the formation of bark takes place. How can you tell the approximate age of a tree-stump?

4. What is meant by the phrase "alternation of generations"? Illustrate it by reference to the life-history of the fern.

5. What is the part played by the flower in the life-history of a flowering plant? Describe carefully, with drawings, the structure and function of the parts of any insect-pollinated flower you know.

6. How does the green plant normally obtain its nitrogen? Name any unusual methods by which plants obtain nitrogen and describe *one* case in detail.

7. *Either (a)* Write a short essay on the interdependence of plant and animal life.

Or (b) Compare and contrast the life problems of a water plant (such as the Water Crowfoot) with those of a plant growing on a mountain top, and give an account of the structural adaptations in both cases.

SCIENCE

HIGHER GRADE—(CHEMISTRY)

Wednesday, 1st April—2.15 p.m. to 4.15 p.m.

Not more than FIVE questions should be attempted. Full marks will not be awarded unless the answers are illustrated by carefully drawn diagrams of reasonable size and supplemented by equations wherever possible.

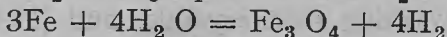
H = 1, O = 16, Cl = 35.5, Na = 23, C = 12.

A litre of hydrogen at N.T.P. weighs 0.09 gm.

Mathematical tables will be supplied to those who desire them.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. Define *reversible reaction*.



Describe briefly how you would perform the experiments represented by these equations, and account for the apparent contradiction.

What happens when the following substances are heated :—(1) calcium carbonate, (2) potassium chlorate, (3) ammonium chloride? Are the reactions reversible? Indicate the experiments which you would perform in support of your answer.

2. Explain carefully the statements :—

(1) The equivalent of copper is 31·5,

(2) The equivalent of sulphuric acid is 49.

Indicate briefly experiments you would perform to illustrate your answers.

The chloride of a metal contains 88·7 per cent. of chlorine. Calculate the equivalent of the metal.

When volatilized, 0·504 gm. of the chloride occupies 532 c.c. at a temperature of 819° C. and under a pressure of 800 mm. of mercury. Calculate the molecular weight of the compound.

3. Describe the laboratory method of preparing nitric acid. Detail two experiments you would perform to show two chemical properties of the acid, other than its acidity.

How would you show that nitric acid contains hydrogen, oxygen, and nitrogen?

Write a short note on the manufacture of nitric acid from the air.

4. How would you determine by experiment the composition of water (*a*) by weight, and (*b*) by volume?

Upon what evidence is the formula H_2O assigned to a molecule of water?

5. Explain the use of washing soda for softening water.

Why do washing soda crystals, on exposure to the air, gradually change to a white powder ?

It was found that 5 gm. of the crystals required 35 c.c. of normal hydrochloric acid for neutralisation, and that 5 gm. of the white powder required 80.6 c.c. of normal hydrochloric acid for neutralisation.

Determine (a) the number of molecules of water of crystallisation in washing soda crystals, and (b) the percentage of anhydrous sodium carbonate in the white powder.

6. State Gay Lussac's Law concerning the volumes of combining gases.

How did Avogadro explain this law ?

Describe in detail the experiments you would carry out to illustrate this law in the case of the combination of (1) hydrogen and chlorine, (2) hydrogen and nitrogen.

A piece of sulphur is ignited in oxygen contained in a glass globe fitted with a stopcock. After combustion the globe is allowed to cool. Explain what happens when the stopcock is opened (1) under mercury, (2) under caustic soda solution.

7. State any two chemical properties which distinguish the metallic from the non-metallic elements. Illustrate your answer by referring to two typical members of each class.

Starting with sodium and sulphur, how would you prepare a specimen of (a) normal sodium sulphate ; (b) acid sodium sulphate ?

SCIENCE

HIGHER GRADE—(ENGINEERING)

Wednesday, 1st April—2.15 P.M. to 4.15 P.M.

FIVE questions should be attempted, viz., THREE questions from Section A, and TWO questions from Section B.

When Candidates use a formula they must explain each symbol. Units must always be stated.

Take $\pi = \frac{22}{7}$, and $g = 32$ ft. per sec. per sec.

Square-ruled paper and four-place logarithmic tables are provided.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

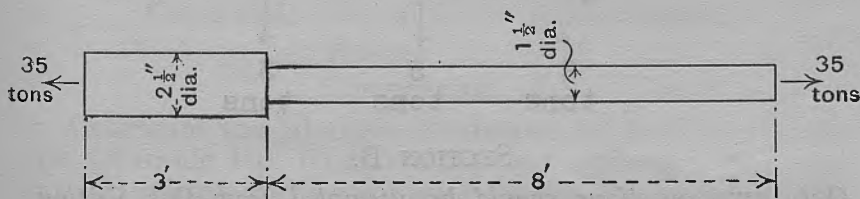
SECTION A.

Only THREE questions should be attempted from this Section.

1. Define the terms *stress*, *strain*, *limit of elasticity*.

A round steel bar 18 feet long and 1.5 inches in diameter stretches $\frac{1}{20}$ th of an inch when pulled by a load of 5.5 tons. Determine the modulus of elasticity of the material.

A tie-bar of the same material (see figure below) is under a direct tensile load of 35 tons. Determine the stress in each part of the bar and the total elongation of the bar.



2. With reference to a machine, what is meant by the terms *mechanical advantage*, *velocity ratio*, and *efficiency*?

A machine requires an effort of 50 pounds to lift a load of 1,250 pounds, and an effort of 8 pounds to overcome the friction of the machine when there is no load. Determine the law of the machine and the probable effort necessary to lift 1,530 pounds. If the velocity ratio is 40, find the efficiency at the 1,250 pounds load.

What is the greatest possible efficiency of this machine?

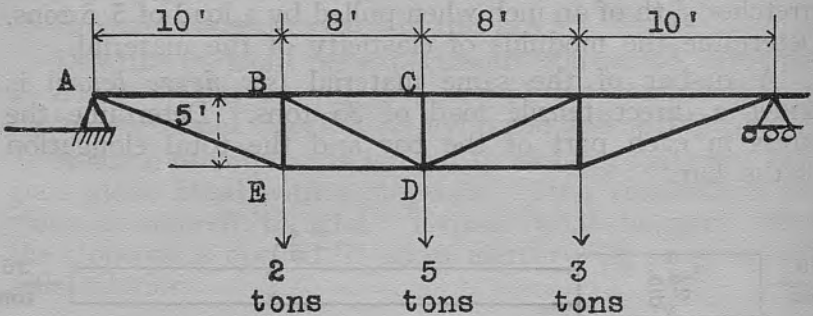
3. A locomotive with its tender weighs 95 tons. On the level it is capable of hauling a train load of 420 tons at 50 m.p.h., when working at full power, the resistance due to friction, etc., being 18 pounds per ton.

Determine the horse-power of the engine.

The train while travelling at this speed now comes to a 2 miles uniform incline, on which the vertical rise is 1 per 140 of rail. Assuming that the frictional resistance is still 18 pounds per ton, find the speed of the train when it reaches the top of the incline.

How long will it take the train to reach the summit of the incline?

4. The sketch shows a pin-jointed frame structure. Draw the frame to scale; and determine by means of a stress diagram or otherwise, for the given loading, the reactions at the supports, and the load in the members BC, BD, and AE. State which of these members are in tension and which in compression.



SECTION B.

Only two questions should be attempted from this Section.

5. *Either (a).* Explain briefly the main points of difference between the *smoke-tube* and the *water-tube* types of boiler, and give a short statement of the advantages claimed for the latter type.

Give an outline sketch of any one type of boiler, either smoke-tube or water-tube, showing how superheating of the steam may be arranged for. Indicate the position of valves and other mountings usually fitted to boilers.

Or (b). Describe briefly the method employed in measuring rapidly varying pressures, such as are found in steam or internal combustion engines.

Sketch a graph showing how the pressure may vary throughout the length of the stroke of a steam engine.

State the data that are necessary for the calculation of the indicated horse-power of a steam engine, and evolve a formula for this calculation.

6. Describe, with simple diagrams, the four-stroke cycle of operations in a gas engine.

A single-acting gas engine, working on the four-stroke cycle has a cylinder diameter of 14 inches, and a stroke of 21 inches. When the engine was running on test the following particulars were obtained :—

Mean effective pressure..	..	86 lb./in. ²
Revolutions per minute	..	206
Explosions per minute	81
Brake load 215 lb. at a radius of 5 feet.		

Calculate the I.H.P., B.H.P. and mechanical efficiency of the engine.

7. Define the following terms which refer to the valve gear of a reciprocating steam engine : (a) *eccentric travel*, (b) *lap*, (c) *lead*, (d) *angle of advance*.

The connecting rod of a steam engine is 4 cranks long and the travel of the valve is $4\frac{1}{2}$ inches. Draw a valve diagram for each side of the valve from the given data.

Cover end. Cut off	..	0.75 of stroke.
Release	..	0.95 ,,
Compression	0.8	,,

Determine the (a) angle of advance, (b) lead, (c) outside lap, (d) inside lap, (e) maximum port opening; also, the cut off, release and compression at the crank end, if the laps are the same as for the cover end.

SCIENCE

LOWER GRADE—(GEOGRAPHY)

Wednesday, 25th March—10 A.M. to 12.30 P.M.

SIX questions should be attempted, viz., the whole of Section A, TWO questions from Section B, and TWO questions from Section C.

The value attached to each question is shown in brackets after the question.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

SECTION A.

The whole of this Section should be attempted.

1. On the accompanying map of England and Scotland :
 - (a) Mark and name the Aire Gap and the towns of Alloa, Birkenhead, Brighton, Bristol, Elgin, Harwich, and Hawick. Name the rivers Annan, Great Ouse, Tees, and Teviot.
 - (b) Show by shading and name the North Downs, South Downs, Dartmoor, Exmoor, the Chalk Escarpment from the Chilterns northwards, the Limestone Escarpment from the Cotswolds northwards.
 - (c) Draw the L.N.E. railway route from Edinburgh to Aberdeen, and the L.M.S. railway route from Glasgow to Inverness, inserting two intermediate stations on each route.
 - (d) Enclose with a dotted line the following *four* areas : The chief wheat-growing district and the chief hop-growing district of England ; two important dairying districts of Scotland. Print in the proper areas W for wheat, H for hops, and D, D for dairying. (20)

2. On the accompanying map of the Mediterranean area—
 - (a) Name the Ægean Sea, Corsica, Palestine, Plain of Lombardy, River Ebro, and River Danube. Mark and name the Atlas Mountains, Algiers, Athens, Constantinople, Marseilles, and Odessa.
 - (b) Print "copper," "cotton," "currants," "iron," "oranges," "sulphur," over areas noted for these things (one area for each commodity). Mark and name one town in each area.
 - (c) Mark and name two active volcanoes, two ship-canal, two British coaling-stations, and the sites of Troy and Pompeii. (20)

SECTION B.

Two questions should be attempted from this Section.

3. Describe the course of the River Clyde from source to sea, referring to types of scenery, vegetation, occupations of the people, and towns. Give a sketch-map. (15)

4. Name two important ship-building districts, *one* in England, and *one* in Ireland. Describe the position of each district, and discuss its advantages as a ship-building centre. (15)

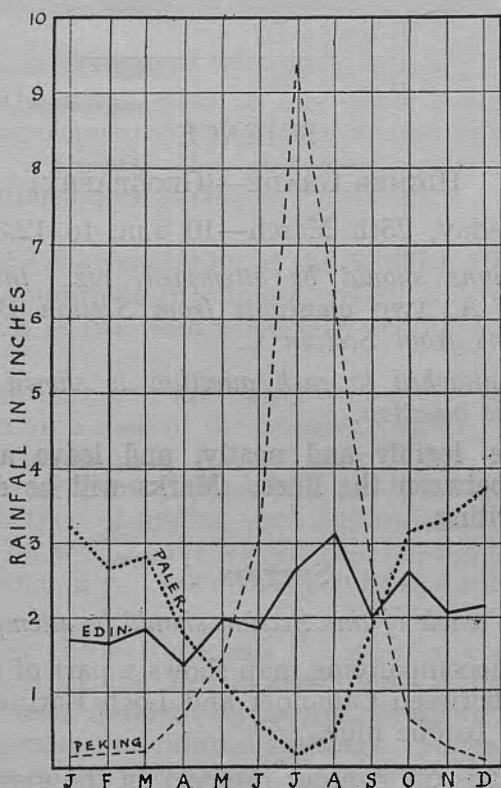
5. Compare the advantages and disadvantages of London, Liverpool, and Southampton as great ports. (15)

6. Name two places in Scotland where water-power has been harnessed on a large scale. What geographical conditions have favoured this development? (15)

SECTION C.

Two questions should be attempted from this Section.

7. The diagram below shows the rainfall throughout the year at Edinburgh, Palermo, and Peking. Write notes on the types of rainfall shown by the three graphs. (15)



8. What points of likeness in form, climate, vegetation, and economic resources can you point out in regard to the western sides of Scotland, Norway, and British Columbia? (15)

9. Make a sketch-map to show the locations of *one* of the following *pairs* of cities:—(a) New York and Montreal, or (b) Chicago and Winnipeg, or (c) Bombay and Delhi. State the special advantages of location possessed by each of the two cities selected, and point out the nature of their importance. (15)

10. What physical conditions favour the cultivation of wheat? In what parts of the world is it grown in large quantities? Which of these areas export it to Britain? In what months does the harvest take place in the various exporting countries? (15)

11. Write a brief account of the work in exploration of *one* of the following:—Captain Cook, Livingstone, Amundsen. (15)

SCIENCE

HIGHER GRADE—(GEOGRAPHY)

Wednesday, 25th March—10 a.m. to 12.30 p.m.

FIVE questions should be attempted, viz., the whole of Section A, TWO questions from Section B, and TWO questions from Section C.

The value attached to each question is shown in brackets after the question.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

SECTION A.

The whole of this Section should be attempted.

1. The accompanying map shows a part of the Scottish Highlands between Callander and Loch Earn on the scale of one inch to one mile.

(a) What is the contour interval on the map?

- (b) Estimate the average gradient of the Burn of Ample, draining northwards to Loch Earn, expressing it as a numerical ratio (e.g., 1 in 10), and showing the method of calculation.
- (c) From point **A** in the north-west to point **B** east of Loch Lubnaig draw *in ink on the map* a line to represent the watershed limiting, on the north and east, the area drained to Loch Lubnaig.
- (d) Describe, in a general way, the form of the mountains east of Glen Ample, and, in more detail, the form of Ben Vorlich. (36)

SECTION B.

Two questions should be attempted from this Section.

2. "A mere statement of the average total amount of rainfall for the whole year at any place is not sufficient. It must be supplemented by some indication of the seasonal distribution." Discuss this statement, referring to the rainfall distribution of particular countries. (16)

3. Describe the vegetation of the Scottish Highlands, as affected by conditions of climate, relief, soil, and water; and show how it has been artificially modified. (16)

4. Assume that you are out-of-doors, and wish to find your position on a map of the country visible; you cannot recognise on the map any features near to you, but you *can* identify three or more distant hills in different directions. Describe a method of finding your approximate position on the map. You would have a sight-rule (straight edge), and you may assume, if you wish, that you have a compass. (16)

5. Contrast the eastern and the western coast-lines of Scotland north of the Forth and Clyde estuaries. Distinguish between different types of sea-inlets. Refer to islands, peninsulas, and natural harbours. Suggest probable causes for the appearances that you describe. (16)

6. Give an account of any geographical excursion that you have undertaken. State the objects of the excursion, and say where you went and what you saw, illustrating, if possible, by a sketch-map or other drawing. (16)

SECTION C.

Two questions should be attempted from this Section.

7. Write a geographical account of the British sea-fisheries, explaining the location of the fishing grounds. Mention the chief British fishing ports, and give reasons for their relative importance. (16)

8. Draw a sketch-map of the northern Plains of India, showing the main rivers. Describe, in outline, the climate and products, and the density of the population, pointing out and explaining the chief contrasts between the eastern and the western parts of the region. (16)

9. What are the chief manufacturing districts of *either* Germany *or* France? Name the industries that are carried on, and account as far as you can for their presence in these localities. Mention the chief towns in each district. (16)

10. Write a brief account of *one* of the following:—
(a) The Argentine Republic *or* (b) The Cape Province and Natal, *or* (c) the part of the United States of America lying east of the Mississippi and south of the Ohio and Potomac rivers (i.e., the states from Kentucky and the Virginias southwards to the Gulf of Mexico). Arrange your answer under the headings—relief, climate, productions, occupations, and communications. (16)

11. "In Canada and in Australia, well-peopled areas are separated by vast tracts with very small population." Expand this statement. (16)

SCIENCE

HIGHER GRADE—(PHYSICS)

Wednesday, 25th March—1.30 P.M. to 4 P.M.

Not more than FIVE questions should be attempted. One of these must be taken from Section I (Mechanics), and one from each of two other Sections. The remaining two questions may be selected from any part of the paper.

Answers should, wherever possible, be illustrated by carefully drawn diagrams of reasonable size.

Mathematical tables will be supplied to those who desire them.

Before handing in their examination books Candidates should enter in the space provided on the front cover the numbers of the questions they have attempted.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

SECTION I (MECHANICS).

At least ONE question from this section must be attempted.

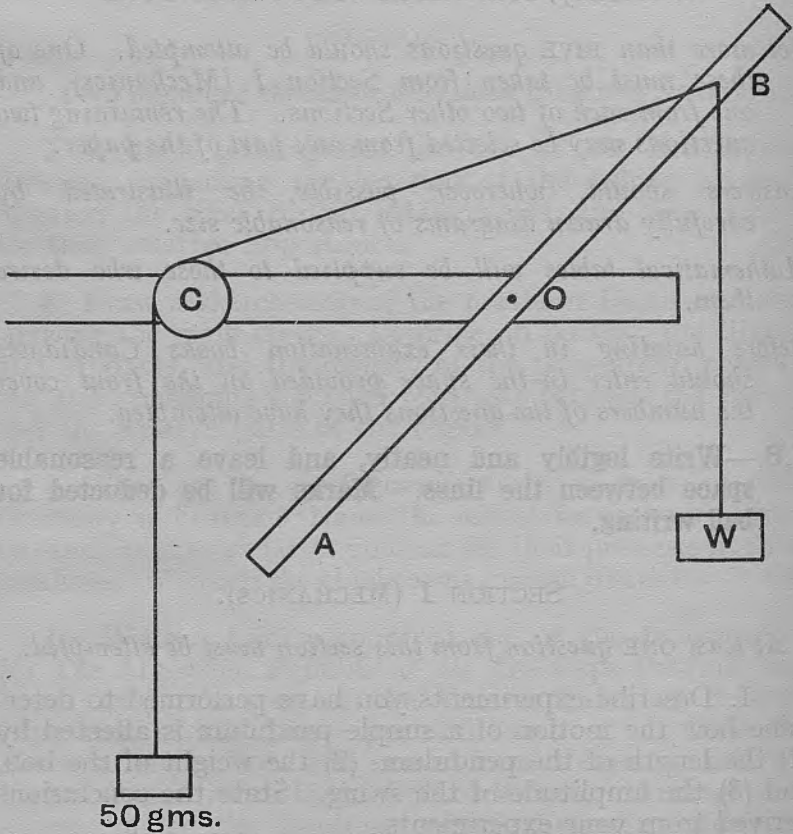
1. Describe experiments you have performed to determine how the motion of a simple pendulum is affected by (1) the length of the pendulum, (2) the weight of the bob, and (3) the amplitude of the swing. State the conclusions derived from your experiments.

In an experiment with a simple pendulum the following data were obtained :—

Length of pendulum in inches.	Time of one complete vibration in seconds.
16.1	1.28
21.9	1.49
28.0	1.69
36.3	1.92

By means of a suitable graph or otherwise, show how these figures verify one of the laws of the simple pendulum, and calculate the acceleration due to gravity. ($\pi = 3.14$.)

2. Enunciate the law of moments as applied to forces in equilibrium ; outline any experiment you have performed to illustrate this law in the case of a body in equilibrium under the action of three non-parallel forces.



The diagram given above shows a thin uniform ruler A B in equilibrium. It is pivoted at its middle point O ; two thin threads are attached to a peg at a point B on the central line of the ruler ; one of the threads passes over a fixed pulley C and carries a weight of 50 gms., the other hangs vertically from B and carries an unknown weight. Assuming that the friction on the pivot and in the pulley are negligible, state and make the necessary measurements on the diagram (which is drawn to scale) and thus find the weight " W."

If the ruler weighs 20 gms., what is the vertical pressure on the pivot ?

3. Describe, and explain the action of the barometer in use in your laboratory.

The table given below shows corresponding readings on a defective mercury barometer and on a standard mercury barometer. Assuming that the section of the defective barometer is uniform throughout and that the defect is due to the presence of air in the tube, (a) write down the pressure exerted by the confined air in each case, and by means of Boyle's Law find the corresponding lengths of tube filled by the confined air; (b) find the correct reading when the defective barometer reads 75.5 cm.

Defective Barometer	Standard Barometer.
76.5 cm.	77.0 cm.
76.0 ,,	76.4 ,,

SECTION II (HEAT).

4. Define and distinguish between the coefficients of absolute and apparent expansion, and explain why the terms are used only in the case of liquids. Describe an experiment for determining the coefficient of absolute expansion of turpentine. Show clearly the measurements you would take, and how you would use them to calculate the coefficient of absolute expansion.

5. What factors influence the rate at which a given mass of liquid cools? Sketch the apparatus you would employ to study the cooling of a liquid, and give an outline of your method.

In an experiment, a crystalline solid was melted by heating in a water bath at 70°C . It was then allowed to cool, and the temperature was read every half minute.

The record was as follows:— (The readings, although arranged in four lines, are continuous.)

(A) 66° , 59° , 54° , 51° ,

(B) 49° , 48.5° , 47.5° , 46.5° , 46° , 45.5° ,

(C) 47° , 47° , 47° , 47° , 47° , 47° , 47° ,

(D) 46.5° , 45° , 44° , 43° , 42° , 41.5° , 41° , 40.5° , 40° .

At (C) two crystals of the solid were added and the whole vigorously stirred.

Plot the temperature-time curve on squared paper, and write a note on each of the four portions (A), (B), (C), (D).

6. Define the terms *water equivalent* and *latent heat of fusion*.

Describe a method of finding the latent heat of fusion of ice, explaining all precautions taken to obtain an accurate result.

A copper calorimeter weighing 200 gms. contains 100 gms. of water at 15° C. 30 gms. of powdered ice at -10° C. are added to the water, and the contents of the calorimeter are stirred until the temperature is constant at 0° C. Assuming that no heat has been gained or lost by radiation; find the mass of ice, and the mass of water now contained in the calorimeter.

(S.H. of copper, 0.094; S.H. of ice, 0.5; L.H. of ice, 80 cal. per gm.)

SECTION III (SOUND).

7. Define *frequency*, and *wave length*. Explain what is meant by *resonance*.

Describe an experiment by which the velocity of sound may be determined by means of a resonance tube, closed at one end, explaining exactly what happens.

In an experiment of this kind the following record was obtained:—

Tuning Fork.	Frequency.	Resonating column.
C	256	31.5 cm.
E	320	26.1 „
G	384	21.4 „
C ¹	512	15.5 „

Temperature of the air 20° C.

Calculate the wave length of each note; and determine, in metres per second, the velocity of sound in air at 20° C.

From your result obtain the velocity of sound in air at 0° C.

8. State the three laws involved in the formula

$$n = \frac{1}{2l} \sqrt{\frac{T}{M}}$$

indicating the units employed.

Describe carefully an experiment you have performed to verify one of the laws.

A wire one metre long has a frequency of 150 when stretched by 20 kgs. State exactly how the frequency could be raised to 200 (*a*) by a change of the length only, (*b*) by a change of the tension only.

Calculate the new length in case (*a*), and the new tension in case (*b*).

SECTION IV (LIGHT).

9. Define *index of refraction*, *total internal reflection* and *critical angle*. Show how you would demonstrate two of them experimentally.

Describe the method you would use to find the index of refraction for air-glass by means of a triangular glass prism.

In an experiment of this kind the angle of the prism is $61^{\circ} 30'$ and the angle of minimum deviation 25° . Calculate the index of refraction for air-glass.

10. A pin stands vertically in front of a double convex lens, behind which is a plane mirror. Show how this could be used to determine the focal length of the lens. Describe a second method by which you could verify your result.

A drop of glycerine rests on a horizontal glass mirror. A double convex glass lens is placed horizontally on the glycerine so that the latter forms a plano-concave liquid lens. How would you determine the focal length of this liquid lens?

SECTION V (ELECTRICITY AND MAGNETISM).

11. State clearly what you understand by (*a*) the pole strength and (*b*) the moment of a magnet.

Two magnets of equal pole strength and of length 2 cm. and 4 cm. respectively are placed in the same straight line (magnetic east and west) on either side of a magnetometer needle. The centre of the shorter is 40 cm. from the needle. At what distance must the other be placed in order that there may be no deflection of the needle? (The lengths of the magnets may be treated as negligible compared with their distances from the needle.)

Deduce from first principles the formula used.

12. State Faraday's Laws of Electrolysis and explain the statement "One coulomb liberates $\cdot 00112$ gm. silver."

Describe how you would determine the electro-chemical equivalent of silver, and show how you would use it to find the reduction factor of a tangent galvanometer.

In an experiment the weight of silver deposited was $1\cdot 372$ gms. in 45 minutes. The deflection of the galvanometer needle was 30° . Find the reduction factor of the galvanometer.

13. State Ohm's Law, explaining clearly the units employed in measuring the quantities involved in your statement.

How would you verify the law experimentally?

Two resistances of 5 ohms and 8 ohms respectively are connected in parallel. What is the total current when the former carries 12 amperes? What third resistance must be connected in parallel to reduce the current in the 5 ohms resistance to 6 amperes, the total current remaining the same?

14. Explain as fully as you can the construction and action of two of the following:—(a) Gold leaf electroscope, (b) any form of electrostatic frictional machine (such as the Wimshurst), (c) any form of condenser, (d) simple dynamo.

SCIENCE

HIGHER GRADE—(PURE ZOOLOGY)

Monday, 30th March—2 P.M. to 4 P.M.

FIVE questions in all should be attempted.

Answers should, wherever possible, be illustrated by diagrams of reasonable size.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

1. By what structural features would you recognise the following types of habit among the Mammalia?—

- (a) Herbivorous.
- (b) Carnivorous.
- (c) Omnivorous.
- (d) Running.
- (e) Leaping.
- (f) Climbing.

2. Describe briefly the general plan of the central nervous system of any Vertebrate with which you are acquainted.

Give a list of the cranial nerves, mentioning the function of each.

3. Describe the organs and mode of feeding and respiration of a Gastropod Mollusc such as the Snail (*Helix*) and compare with those of any Lamellibranch Mollusc with which you are acquainted (*e.g.*, the Mussel, *Mytilus*).

4. Describe the principal methods of locomotion found in the Protozoa. Mention any Metazoa in which similar methods are adopted, either for the movement of the whole body or of any of its component cells.

5. Compare and contrast the following animals:—

- (a) Cockroach,
- (b) Beetle,
- (c) Fly,
- (d) Butterfly,

pointing out especially those features which would lead you to classify all these forms as Insects. Would you place the Spider in this group? Give your reasons.

6. What part do the gametes play in the life history of an animal? Describe briefly any example with which you are acquainted in which reproduction takes place without (a) one of the gametes, (b) any gametes.

7. What do you understand by the terms (a) parasitism, (b) symbiosis? Mention a typical example of each and describe briefly the life histories of the animals concerned.

SCIENCE

HIGHER GRADE—(ZOOLOGY AND HUMAN PHYSIOLOGY)

Monday, 30th March—2 P.M. to 4 P.M.

FIVE questions in all should be attempted.

Before handing in their books Candidates should enter in the space provided on the front cover the numbers of the questions they have attempted in both Sections.

Answers should, wherever possible, be illustrated by diagrams of reasonable size.

N.B.—Write legibly and neatly, and leave a reasonable space between the lines. Marks will be deducted for bad writing.

SECTION I.—ZOOLOGY.

1. By what structural features would you recognise the following types of habit among the Mammalia?—

- (a) Herbivorous.
- (b) Carnivorous.
- (c) Omnivorous.
- (d) Running.
- (e) Leaping.
- (f) Climbing.

2. Describe briefly the general plan of the central nervous system of any Vertebrate with which you are acquainted.

Give a list of the cranial nerves, mentioning the function of each.

3. Describe the organs and mode of feeding and respiration of a Gastropod Mollusc such as the Snail (*Helix*) and compare with those of any Lamellibranch Mollusc with which you are acquainted (*e.g.*, the Mussel, *Mytilus*).

4. Describe the principal methods of locomotion found in the Protozoa. Mention any Metazoa in which similar methods are adopted, either for the movement of the whole body or of any of its component cells.

SECTION II.—HUMAN PHYSIOLOGY.

5. An adequate diet contains (among other things) (a) proteins, (b) salts, (c) vitamins. Explain their uses, and indicate the food-stuffs which supply them.

6. Give an account of the functions of *any three* of the following :—

Skin, kidney, intestine, thyroid, pancreas.

Describe the structure of *any one* of the three you may select.

7. Write brief notes on—

- (a) Body temperature,
- (b) Circulation of the blood,
- (c) Muscle *or* nerve,
- (d) The effect of being in a room (1) which is ill-ventilated, (2) in which there is an escape of coal gas.

APPENDIX.

LIST OF AUTHORITIES BY WHOM EVIDENCE OF SUCCESS AT THE LEAVING CERTIFICATE EXAMINATION IS CONDITIONALLY ACCEPTED IN LIEU OF PRELIMINARY EXAMINATIONS.

N.B.—FOR PARTICULARS AS TO THE CONDITIONS GOVERNING ACCEPTANCE REFERENCE SHOULD BE MADE TO THE REGULATIONS OF THE AUTHORITY CONCERNED.

Scottish Universities Entrance Board :

- University of Aberdeen.
- University of Edinburgh.
- University of Glasgow.
- University of St. Andrews.

University of Oxford.

University of Cambridge.

University of London.

University of Bristol.

University of Durham :

- Durham Colleges.
- Armstrong College, Newcastle-upon-Tyne.
- College of Medicine, Newcastle-upon-Tyne.

Northern Universities Joint Matriculation Board :

- University of Manchester.
- University of Liverpool.
- University of Leeds.
- University of Sheffield.
- University of Birmingham.

University of Wales.

The Queen's University of Belfast.

Girton College, Cambridge.

Imperial College of Science and Technology :

- Royal College of Science.
- Royal School of Mines.
- City and Guilds (Engineering) College.

Royal Holloway College, Englefield Green, Surrey.

The Lords of Council and Session (for purposes of the Law Agents' Act).

The Society of Solicitors before Supreme Courts.

The Law Society.

The General Council of Medical Education and Registration of the United Kingdom.

The Dental Board of the United Kingdom.

The Joint Examinations held by :

The Royal College of Physicians of Edinburgh.

The Royal College of Surgeons of Edinburgh.

The Royal Faculty of Physicians and Surgeons of Glasgow.

The Examining Board in England by the Royal College of Physicians of London, and the Royal College of Surgeons of England.

*The Pharmaceutical Society of Great Britain.

The Chartered Accountants of Scotland.

The Institute of Chartered Accountants in England and Wales.

*The Society of Incorporated Accountants and Auditors.

*The London Association of Accountants.

*The Institute of Municipal Treasurers and Accountants (Incorporated).

The Institute of Company Accountants Limited.

The Faculty of Actuaries in Scotland.

The Institute of Actuaries.

The Chartered Insurance Institute.

The Institute of Bankers.

The Institute of Bankers in Scotland.

The Chartered Institute of Secretaries.

*The Royal Sanitary Association of Scotland.

The Faculty of Surveyors of Scotland.

The Chartered Surveyors' Institution.

The Auctioneers' and Estate Agents' Institute of the United Kingdom.

The Royal Institute of British Architects.

The Institution of Civil Engineers.

The Institution of Mechanical Engineers.

The Institution of Municipal and County Engineers.

The Institute of Chemistry of Great Britain and Ireland.

The National Froebel Union.

The Institute of Physics.

The Royal College of Veterinary Surgeons.

The British Optical Association.

The Chartered Institute of Patent Agents.

The Library Association.

The Textile Institute.

* Evidence of having obtained the Day School Certificate (Higher) is also accepted by these Authorities; and by the Air Ministry—for entry as Aircraft Apprentice and as Apprentice Clerk, Royal Air Force.

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