

ENGLISH SCHOLARSHIP EXAM 2023

 $1\frac{1}{2}$ hours

Instructions:

- This paper is in two sections worth equal marks; you are advised to divide your time evenly between the two.
- In both responses you will be marked for the quality of your writing (spelling, grammar and punctuation).
- Please begin your response to Section B on <u>a new piece of paper</u>.

SECTION A: WRITING

Studies have shown that young people are not getting enough sleep. This lack of sleep is negatively affecting behaviour, academic progress, focus, and mood.

Imagine that your Headmaster has decided to respond to this concern and plans to start the school day one hour later than normal.

Write a **speech** for your school assembly in which you show either your support or disapproval of this plan. You might decide that this is a good idea, or perhaps you think it will not work. Alternatively, perhaps you do not think the headmaster is going far enough in his changes.

Aim to use engaging and persuasive writing to make your speech as interesting as possible.

Marks will be awarded for clarity and accuracy of writing, imaginative and thoughtful use of English, originality of thought and evidence of an ability to think critically and reflectively.

[25 marks]

SECTION B: READING

Read the following excerpt from Cold Comfort Farm by Stella Gibbons and answer the question that follows.

Dawn crept over the Downs like a sinister white animal, followed by the snarling cries of a wind eating its way between the black boughs of the thorns. The wind was the furious voice of this sluggish animal light that was baring the dormers and mullions and scullions of Cold Comfort Farm.

The farm was crouched on a bleak hillside, whence its fields, fanged with flints, dropped steeply to the village of Howling a mile away. The farmhouse was a long, low building, twostoried in parts. Other parts of it were three-storied. Edward the Sixth had originally owned it in the form of a shed in which he housed his swineherds, but he had grown tired of it, and had had it rebuilt in Sussex clay. Then he pulled it down. Elizabeth had rebuilt it, with a good many chimneys in one way and another. The Charleses had let in alone; but William and Mary had pulled it down again, and George the First had rebuilt it. George the Second, however, burned it down. George the Third added another wing. George the Fourth pulled it down again.

By the time England began to develop that magnificent blossoming of trade and imperial expansion which fell to her lot under Victoria, there was not much of the original building left, save the tradition that it had always been there. It crouched, like a beast about to spring, under the bulk of Mockuncle Hill. Like ghosts embedded in brick and stone, the architectural variations of each period through which it had passed were mute history.

Under the ominous bowl of the sky a man was ploughing the sloping field immediately below the farm, where the flints shone bone-sharp and white in the growing light. The ice-cascade of the wind leaped over him, as he guided the plough over the flinty runnels. Now and again he called roughly to his team: *Upidee, Travail! Ho there, Arsenic! Jug-jug!* But for the most part he worked in silence, and silent were his team. The light showed no more of his face than a grey expanse of flesh, expressionless as the land he ploughed.

Every now and again, when he came to the corner of the field and was forced to tilt the scranlet of his plough almost on to its axle to make the turn, he glanced up at the farm where it squatted on the gaunt shoulder of the hill, and something like a possessive gleam shone in his dull eyes. But he only turned his team again, watching the crooked passage of the scranlet through the yeasty earth, while the bitter light wanned into full day.

Glossary of words that may be unfamiliar: Dormers and mullions and scullions – different kinds of windows Flints – stones Swineherds – people who raise and herd pigs Runnels – small channels in the ground Scranlet – an agricultural, farming term (a made-up word by the author)

Explore the presentation of the farm, the farmer, and the surrounding landscape in this passage.

Be sure to use quotations from the passage in your response.

[25 marks]



French Scholarship Examination 2023

60 Minutes

- Section 1 : Text and reading comprehension
- Section 2 : Text and retranslation
- Section 3 : Translation into French
- Section 4 : 130-200 word response in French

Write your answers on the question paper using blue or black ink. Ensure that you write you name on the paper !

Name _____

1. Read the passage from *Le gone du Chaâba*. Find the English expressions; write them in French, exactly as they are in the text. You will be penalised for incorrect spelling and missed accents.

- Ton père ! Là-bas. Regarde. Il vient par là.

- À ces mots, une violente déflagration secoue mon intérieur. Rue Sergent-Blandan, j'aperçois mon père, l'air très agité, qui s'avance vers moi. Pendant quelques secondes, je n'arrive plus à penser. S'il me voit avec des filles, je n'oserai plus jamais le regarder dans les yeux. Aussitôt je m'excuse auprès de l'assemblée, prétexte une affaire urgente pour ne point paraître ridicule aux yeux des filles. Le dos courbé au maximum, je me défile à toutes jambes du côté de la rue de la Vieille. Bouzid a dû me voir. Je n'en suis pas sûr. La réponse ne tarde pas. À peine ai-je parcouru quelques mètres qu'une voix terrible recouvre la place Sathonay. Les pigeons s'enfuient toutes ailes dehors.

- Razzzouz ! s'écrie le vieux.

Je feins de ne rien entendre. Il m'avertit :

- Razzzouz ! Je t'ai vu.

| • Example : I saw you | je t'ai vu |
|-----------------------------------|------------|
| 1. I will never again dare | |
| 2. I run away at top speed | |
| 3. If he sees me | |
| 4. I pretend to hear nothing | |
| 5. I apologise | |
| 6. Head bowed | |
| 7. I glimpse | |
| 8. I have barely moved | |
| 9. In order not to seem | |
| 10.Seeming very troubled | |
| | |

(10 marks)

2. Read the translated sections of text. Adapt the original language to complete the translation. Check verb forms, singular / plural nouns and adjectives etc.

• Example

Je t'ai vu : I saw you → You did not see me : **Tu ne m'as pas vu**

- 1. Bouzid a dû me voir : Bouzid must have seen me
 - \rightarrow They must have seen us :
- 2. *Il m'avertit* : He warns me

 \rightarrow She did not warn me :

3. *Il vient par là* : He is coming from there

 \rightarrow Nobody will come from there :

- 4. Je n'en suis pas sûr : I'm not sure
 → We are no longer sure :
- 5. *Une violente déflagration secoue mon intérieur* : a violent explosion shakes my insides

 \rightarrow Two violent explosions shake your insides :

(15 marks)

3. Translate the sentences into French using the verb provided:

- a) I get bored. (s'ennuyer)
- b) You (use 'vous') say nothing. (dire)
- c) He will understand the situation. (comprendre)
- d) You (use '*tu*') would be able to leave. (pouvoir)
- e) Lucie went to the park. (aller)
- f) They (use 'elles') are going to read the book. (aller + infinitif)
- g) I had already eaten an apple. (manger)
- h) She had a wash. (se laver)
- i) We never sing. (chanter)
- j) They (use '*ils*') help me a lot. (aider)

(30 marks)

4. You are writing an article in French for your school website talking about <u>friendship</u>. It can be a true or imaginary account.

You will describe 1) the personal qualities of a friend ; 2) how a friend has helped you recently ; 3) what your life would be like without friends ; 4) where you would like to go with friends in future.

Answer in the spaces provided. Aim to write 35-50 words per question. Do not exceed 200 words in total (focus on accuracy rather than quantity) – 40 marks.

1. Décris un(e) de tes meilleur(e)s ami(e)s. Quelles sont ses qualités personnelles ?



2. Comment est-ce qu'un(e) ami(e) t'a aidé récemment ?

3. Comment serait ta vie si tu n'avais pas d'ami(e)s ?

4. Où voudrais-tu aller avec des ami(e)s à l'avenir et pourquoi ?



Geography Scholarship Examination 2023

60 Minutes

Section 1 consists of short and medium length questions. Answer all questions in the space provided.

Sections 2 consists of a choice of 4 essays. Answer **one** question on the examination paper in the space provided.

You are advised to spend 30 minutes on section 1 and 30 minutes on section 2.

Clearly name any extra paper used. Use blue or black ink for written text. You may use a pencil for diagrams. You may use a calculator

Answer ALL of QUESTION 1

[spend 30 minutes on this section]

[Total: 20 marks]





Figure 3: UK mean Winter Temperature 1971 - 2000



Figure 2: UK mean Summer Temperature 1961 - 1990

1. Using **Figures 1, 2 and 3** and your own knowledge, explain the impact of at least **two** factors in influencing the climate of the UK. [6 marks]

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Extra Space

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2. Using **Figure 4** and your own knowledge, explain the impact of at least **one** human and **one** physical factor affecting population distribution in the UK. [6 marks]

Extra Space

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Using Figure 5, describe changes in atmospheric CO₂ concentration and global temperature between 1880 – 2010
 [2 marks]



| 4. | Explain how global warming will impact on people and the environment in the UK or a country of | of your |
|----|------------------------------------------------------------------------------------------------|-----------|
| | choice. | [6 marks] |

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Extra Space

END OF SECTION 1

Answer any <u>one</u> of the following essay questions and in each case refer to specific examples, places and processes.

Credit will be given for the use of named and located examples, and the use of well-labelled sketch maps and diagrams, where appropriate.

EITHER

1. Assess the extent to which environmental challenges can be addressed through one's own actions.

OR

2. Assess the extent to which urban development can be managed sustainably for people and the environment.

OR

Evaluate the effectiveness of engineering defences in managing natural processes in river valleys and/or at the coast. [20]

OR

4. Assess the extent to which the impacts of tectonic hazards are always related to their magnitude.

[20]

[20]

Space to plan your answer:

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[Total: 20 marks] [Exam Total: 40 marks]



ENTRANCE SCHOLARSHIPS EXAMINATION 2023

CLASSICAL GREEK 1 hour

GENERAL INSTRUCTIONS:

You must attempt all questions.

You should make an intelligent guess at words you do not know, using your knowledge of English vocabulary.

Try to base any guesses on elements in the sentence that you definitely DO know and make sure that they make sense in context.

Use blue or black ink.

SECTION A: Reading and Grammar (50 marks)

- 1 Identify the following Greek proper names by translitering the Greek.
 - (a) Σφίγξ
 - (b) Σειοηνες
 - (c) Πηγασος
 - (d) Ωκεανος
 - (e) Γανυμηδης

[5]

- 2 Transliterate the following English into Greek (i.e. write them in Greek letters). Long vowels (eta, omega, etc.) are indicated with a mark (e.g. 'ê' or 'ô'). Remember to add breathings where appropriate.
 - (a) Bellerophôn
 - (b) Atlas
 - (c) Mnêmosynê
 - (d) Hêphaistos
 - (e) Harpyia

[5]

3 Change the following nouns from plural to singular, <u>keeping the same case</u>. Write out the Greek singular form and give the <u>basic meaning</u> of each word.

Example: $\tau \circ \upsilon \varsigma \delta \circ \upsilon \lambda \circ \upsilon \varsigma = \tau \circ \upsilon \delta \circ \upsilon \lambda \circ \upsilon$ (slave)

- (a) τας χωρας
- (b) των κριτων
- (c) αίθεαι
- (d) τα τεκνα
- (e) τοις λογοις

[10]

4 Change the following nouns from singular to plural, <u>keeping the same case</u>. Write out the Greek plural form and <u>give the meaning of each word.</u>

- (a) το δενδρον
- (b) $\tau \circ \nu \, \dot{\alpha} \gamma \varrho \circ \nu$
- (c) της στρατιας

5 Change the following verbs from single to plural, or plural to single, keeping the <u>same</u> person and tense. <u>Then translate your answer</u>.

- (a) ἐστε
- (b) λειψομεν
- (c) ἐπαρασκευάζομεν
- (d) ἔπεσον
- (e) ἀπέκτεινε

[10]

[6]

6 The following English words are derived from Greek words. What do they mean in English?

Write down any Greek work you might know related to the English word.

- (a) hegemony
- (b) political
- (c) nautical
- (d) monarchy
- (e) proton
- (f) trilogy [6]

7 Write out any TWO of the following:

- (a) The full future of $\beta\lambda\alpha\pi\tau\omega$.
- (b) 2^{nd} declension f. noun $\delta\delta\sigma\varsigma$ in all its cases (singular & plural).
- (c) Decline the pronouns $\dot{\epsilon}\gamma\dot{\omega}$ and $\sigma\upsilon$.
- (d) The neuter definite article (singular & plural). [8]

SECTION B: Sentences and Composition (35 marks)

| 1 | Translate into English: | |
|---|-------------------------------------------------------------|-----|
| | (a) σφζε τας γυναικας ἐκ της θαλασσης! | [4] |
| | (b) τίς ἐστιν ὁ βασιλεύς ὁ μετα τῶν στρατιωτων; | [4] |
| | (c) ὁ στϱατηγος ἐπίστευσε τοις φυλαξι. | [3] |
| | (d) δύο παιδες οἷόι τ' ἠσαν κουπτειν τα χοηματα ἐν τη νησῷ. | [6] |
| | (e) παφασκευάζομεν πλούσια ἀθλα τω γεφοντι. | [3] |
| | | |

2 Translate into Greek:

| (a) | The sailors have a terrible disease. | [5] |
|-----|---------------------------------------------------|-----|
| (b) | We found the money in the camp. | [5] |
| (c) | You (sg.) want to send the books to the children. | [5] |

SECTION C: Translation (30 marks)

Translate the passage into good English. Write your translation on <u>alternate</u> lines. Vocabulary is given at the foot of the page. Try to identify the proper names mentioned in the passage.

Phaethon

Phaethon never believed he was the son of Phoebus the sun-god until his father granted his wish and the prediction of his mother Clymene came tragically true.

ό μεν Φαιθων παις του Φοιβου ήν. τον δε πατερα αύτου <u>οὐδεποτε εἰδεν</u>. ἐπει φιλος τις ἐλεγεν <u>ότι</u> ὁ Φοιβος οὐ πατηρ ἐστιν. ὁ Φαιθων <u>ἐκλαυσεν</u>. ἡ οὐν μητηρ, Κλυμενη ὀνοματι, ἐπει τουτο ἠκουσεν, δια ὀργην τας <u>χειρας</u> προς τον ἡλιον <u>αἰρουσα</u> εἰπεν, "ώ παι, την <u>ἀληθειαν</u> λεγω. <u>εἰ</u> ὁ Φοιβος μη πατηρ σος, <u>ἀφαιρειτω</u> τον <u>φωτα</u> ἀπο των ἐμων <u>ὀφθαλμων</u>." ἐπειτα ὁ Φαιθων εἰς την <u>ἐω</u> ἐβαινε, <u>ζητων</u> τον πατερα. ἐπει δε τον θεον εύρε, <u>σημα ἰσχυρον</u> ἠθελεν και τον Φοιβον <u>ἀρετο</u> φερειν αὐτον ἐν τω του ἡλιου <u>άρματι</u>. ὁ γαρ Φαιθων τουτο <u>ἐλαυνειν</u> ἠθελησεν.

ό δε Φοιβος <u>ώμωξεν</u>. "<u>ώμοι</u>, παι, οὐχ οίος τ' εἰ ἐλαυνειν το του ἡλιου ἁǫμα." οὐ δε τον παιδα ἐπεισεν. <u>ποοτεφον</u> γαǫ <u>ὑπεσχετο ποιησειν</u> τί ὁ Φαιθων ἠθελεν. ὁ Φαιθων χαλεπως <u>ἠλασε</u> το ἁǫμα. ἡ γη <u>ἐπǫησεν</u>. ὁ ποταμος ὁ Νειλος <u>ἐξηǫανεν</u>. ὁ Φαιθων ἀπεθανεν.

ό δε Φοιβος, <u>κλαιων</u>, οὐδενα φωτα ταυτη τη ήμεǫα <u>ἐδωκεν</u>. ή οὐν γη ἐν <u>σκοτω</u> ἀν. <u>ούτως</u> οἱ της Κλυμενης λογοι ἀληθεις <u>ἐγενοντο</u>.

Vocabulary

| οὐδεποτε | never | άομα | wagon |
|-----------|-------------------------------|-----------------|-------------------|
| εἰδεν | "he saw" | ἐλαυνειν, ἠλασε | to drive |
| ότι | because | ώμωξεν | "he groaned" |
| ἐκλαυσεν | "he wept" | ώμοι | alas! |
| χειρας | hands | προτερον | before |
| αἰρουσα | "raising", f. nom. | ύπεσχετο | "he promised" |
| ἀληθειαν | truth | ποιησειν | to do |
| εἰ | <i>here only</i> = "if" | ἐπǫησεν | "he burned" |
| ἀφαιρειτω | "Let him remove" | ἐξηρανεν | "it dried up" |
| φωτα | light (compare Eng. "photon") | κλαιων | "weeping" |
| ὀφθαλμων | eyes | ἐδωκεν | "he gave" |
| ἐω | the East | σκοτος | darkness / shadow |
| ζητων | "searching for" | ούτως | thus, in this way |
| σημα | sign | έγενοντο | "they became" |
| ἰσχυϱον | sure, certain | | |
| ἠϱετο | "he asked" | | |



History Scholarship Examination 2023

Time: 90 Minutes

There are three sections in this examination.

You are advised to spend approximately 30 minutes on each section.

The quality of your answers is more important than the quantity, so spend 5-10 minutes thinking and 20-25 minutes writing for each section.

Each section is worth 30 marks in total.

SECTION A

Read the background information, and study both sources. Then answer **<u>both</u>** *questions.*

Background information

The Soviet Union, officially known as the **Union of Soviet Socialist Republics (USSR)**, was the largest country that ever existed. It covered more than 8.6 million square miles in Europe and Asia. The USSR was made up of 15 republics, or states. The largest and most powerful was the Russian republic, now called Russia. The USSR was the first country to form a government based on the system known as **Communism**. It only existed from **1922 to 1991**. For much of that time, however, it was one of the most powerful countries in the world.

In 1985, **Mikhail Gorbachev**, was elected leader of the USSR. When he came to power, the USSR was in a crisis. He quickly realised that the country needed to change. His policies focused on two key ideas labelled: **glasnost (openness)** and **perestroika (restructuring)**. He called for open debate on government policy and honesty in facing up to problems.

Over the next few years, dramatic events followed, culminating in a televised speech on **25 December 1991**, in which Gorbachev announced the end of the Soviet Union.

Was Gorbachev considered a success or a failure? Was he responsible for the collapse of the USSR?

Source A: An extract from a speech made by Mikhail Gorbachev in 1987.

The time is ripe for abandoning views on foreign policy which are influenced by an imperial standpoint. Neither the Soviet Union nor the USA is able to force its will on others. It is possible to suppress, compel, bribe or blast, but only for a certain period. From the point of view of long-term big time politics, no one will be able to subordinate others. That is why only one thing - relations of equality - remains. All of us must realise this...This also obliges us to respect one another and everybody.

<u>Source B: An extract from a US newspaper called the *Boston Globe*. This is taken from a report written on the day of Gorbachev's final speech: 25 December 1991.</u>

A sense of failure and regret through his [Gorbachev's] Christmas Day abdication speech - especially in his sorrow over his people 'ceasing to be citizens of a great power'. Certainly, if man-in-the-street interviews can be believed, the former Soviet peoples consider him a failure.

History will be kinder. The Nobel Prize he received for ending the Cold War was well deserved. Every man, woman and child in this country should be eternally grateful.

His statue should stand in the centre of every east European capital; for it was Gorbachev who allowed them their independence. The same is true for the newly independent countries further east and in Central Asia. No Russian has done more to free his people from bondage since Alexander II freed the serfs.

Questions

Question 1

Study Source A. Explain in your own words what Mikhail Gorbachev means when he states that, 'the time is ripe for abandoning views on foreign policy which are influenced by an imperial standpoint.' [10 marks]

Question 2

Study Sources A and B. What do these two sources tell us about the influence of Mikhail Gorbachev in the ultimate collapse of the USSR? [20 marks]

SECTION B

Answer **ONE** of these questions.

<u>Either</u>

3. 'To best understand the events of the past, historians should focus on religious changes.' How far do you agree with this statement? Explain your answer. [30 marks]

<u>or</u>

4. 'Throughout history, leaders have only become great because of good luck.' How far do you agree with this statement? Explain your answer. [30 marks]

SECTION C

5. Study Source C and Source D below. What information do these two sources provide about the changes to territory in the Middle East that occurred between the 11th and 20th centuries? [30 marks]

<u>Source C: A map of the Middle East in 1920 showing the extent of colonial rule in the region</u> (established after the conclusion of World War I)



Some notes on Source C

Кеу

Countries in green = under direct British rule Countries in pink = under British **mandate** Countries in blue = under French rule Countries in purple = under Italian rule Countries in orange = independent states

n.b. a **mandate** was a former Turkish or German territory controlled by an international peace-keeping organisation known as the League of Nations after the end of World War I. In effect, France and Britain controlled these countries depending on who the League of Nations had asked to administer these areas.



Source D: A map of the Eastern Mediterranean showing the events of the First Crusade 1095-1099



ENTRANCE SCHOLARSHIPS EXAMINATION 2023

LATIN 1 ½ hours

GENERAL INSTRUCTIONS:

You must attempt all questions in Section A: Translation, Section B: Comprehension, and Section C: Grammar and Translation.

You should make an intelligent guess at words you do not know, using your knowledge of English vocabulary and the English introduction to each passage.

Try to base any guesses on elements in the sentence that you definitely DO know and make sure that they make sense in context.

Use blue or black ink.

[85 marks]

Section A: Translation

Translate the passage into good English. Use alternate lines.

The expelled Roman general Coriolanus is forced to change his mind about attacking his own city.

<u>Coriolanus</u>, qui olim dux Romanorum erat, a <u>populo</u> suo expulsus est. igitur iratus ab urbe fugit ad <u>Volscos</u>, qui eo tempore bellum contra Romanos gerebant. feminae igitur Romanae timebant, quod Coriolanus suam patriam oppugnare volebat. itaque feminae ad matrem uxoremque eius venerunt. eis persuaserunt ut secum ad castra hostium venirent. feminae enim volebant <u>precibus lacrimis</u>que urbem servare, quod armis defendere non poterant. ubi ad castra pervenerunt, amicus quidam Coriolano nuntiavit magnam turbam feminarum adesse. ille primo cum eis loqui noluit. tum amicus, qui illas cognoverat, "nisi <u>oculi</u> me <u>decipiunt</u>" inquit "mater tua et uxor adsunt, cum duobus parvis filiis." tum Coriolanus surrexit, et ad eos venit. mater irata eum rogavit <u>utrum</u> ad suum filium <u>an</u> ad hostem venisset, <u>utrum captiva an</u> mater in castris eius esset. quibus verbis auditis Coriolanus <u>permotus</u> exercitum ab urbe movit sed igitur postea a <u>Volscis</u> interfectus est.

Names

| Coriolanus -i (m) | Coriolanus |
|---------------------|---------------------------------|
| Volsci -orum (m PI) | Volscians |
| Vocabulary | |
| populus -i (m) | people |
| prex, precis (f) | prayer |
| lacrima -ae (f) | tear |
| oculus -i (m) | eye |
| decipio -ere | I deceive, I trick |
| utrum an | whether or |
| captiva -ae (f) | female hostage, female prisoner |
| permotus -a -um | moved, affected |

[30 marks]

Section B: Comprehension

Manlius Torquatus puts his duty as a general above his feelings as a father in a war against the Latinus.

dum Romani contra Latinos pugnant, <u>Manlius Torquatus</u> exercitum ducebat; filius eius, <u>Titus</u> nomine, equitibus praeerat. <u>Torquatus</u>, vir <u>severus</u> sed fortissimus, militibus suis imperavit ne extra <u>ordinem</u> irent ut cum hostibus pugnarent. <u>disciplinam</u> enim exercitus hoc modo <u>augere</u> volebat. <u>Titus</u> tamen prope <u>stationem</u> quandam aderat. ibi <u>Geminus Minucius</u>, equitum hostium dux, ridens dixit eum secum pugnare timere. Titus igitur iratus erat et, <u>oblitus</u> verborum patris, illum saevissime necavit et arma cepit. ubi in castra rediit, arma Minucii patri statim dedit. Torquatus tamen <u>vultum</u> a filio <u>avertit</u>; "Tite Manli" inquit "quod neque imperatori neque patri <u>paruisti</u>, te interfici iubeo". his verbis dictis, omnes milites miseri erant. Torquatum enim ferocius egisse credebant quam deberet. sed ex illo

10 tempore ei semper <u>parebant</u> et <u>officia</u> sua diligentius faciebant. Latinis igitur hoc anno superatis, a militibus laudatus est.

Names

| Latini -orum (m) | Latins, people of Latium |
|-----------------------------|------------------------------------------------|
| Manlius -i Torquatus -i (m) | Manlius Torquatus (also called just Torquatus) |
| Titus -i (m) | Titus (also called Titus Manlius) |
| Geminus -i Minucius -i (m) | Geminus Minucius |

Vocabulary

equites -um (m pl) praesum -esse severus -a -um pugna -ae (f) ordo -inis (m) disciplina -ae (f) augeo -ere statio -onis (f) obliviscor -i oblitus sum vultum averto -ere -i pareo -ere -ui officium -i (n) cavalry I am in charge of (+ dat) strict fight line, rank discipline I increase +acc. outpost, station I forget +gen. I turn away my face I obey + dat. job, duty

Answer all questions.

| 1. | How is the father Manlius Torquatus described in line 2? (Torquatus, vir) | [2] |
|-----|-------------------------------------------------------------------------------------|-----|
| 2. | What did Manlius Torquatus order his soldiers not to do? (line 3) | [4] |
| 3. | Why did he order this? (disciplinam enim volebat) | [2] |
| 4. | What did Geminus Minucius say in order to taunt Titus? (line 4-5) | [4] |
| 5. | What was the result of Titus getting so angry? (line 5-6, Titus igitur iratus erat) | |
| | | [5] |
| 6. | What did Titus do after he returned to the camp? (line 6-7, ubi in castra rediit) | [2] |
| 7. | What explanation did Manlius Torquatus give for ordering his own son to be kille | d? |
| | (line 7-8) | [4] |
| 8. | What did the soldiers believe about how Torquatus had acted? (line 9) | [2] |
| 9. | Nevertheless, after he had conquered the Latins, what happened to Manlius | |
| | Torquatus? (line 10-11) | [2] |
| 10. | . Why do <u>you</u> think the soldiers changed their minds about Manlius Torquatus? | [3] |
| | | _ |

[30 marks]
Section C: Grammar & Translation

Manlius Torquatus puts his duty as a general above his feelings as a father in a war against the Latinus.

dum Romani contra Latinos pugnant, <u>Manlius Torquatus</u> exercitum ducebat; filius eius, <u>Titus</u> nomine, equitibus praeerat. <u>Torquatus</u>, vir <u>severus</u> sed fortissimus, militibus suis imperavit ne extra <u>ordinem</u> irent ut cum hostibus pugnarent. <u>disciplinam</u> enim exercitus hoc modo <u>augere</u> volebat. <u>Titus</u> tamen prope <u>stationem</u> quandam aderat. ibi <u>Geminus Minucius</u>,

5

equitum hostium dux, ridens dixit eum secum pugnare timere. Titus igitur iratus erat et, olitus verborum patris, illum saevissime necavit et arma cepit. ubi in castra rediit, arma Minucii patri statim dedit. Torquatus tamen <u>vultum</u> a filio <u>avertit</u>; "Tite Manli" inquit "quod neque imperatori neque patri <u>paruisti</u>, te interfici iubeo". his verbis dictis, omnes milites miseri erant. Torquatum enim ferocius egisse credebant quam deberet. sed ex illo

10 tempore ei semper <u>parebant</u> et <u>officia</u> sua diligentius faciebant. Latinis igitur hoc anno superatis, a militibus laudatus est.

- 1. What tense is *ducebat* in line 1? [1]
- 2. What case is *militibus suis* in line 2, and why? [2]
- 3. What case is *hostibus* in line 3? [1]
- 4. Explain the form of *augere* in line 4, and say why it is in that form. [2]
- 5. Explain the form of *ridens* in line 5. [2]
- 6. Identify a preposition in line 7. [1]
- 7. Explain why hoc anno on line 10 is in the ablative case. [1]
- 8. What case is Tite Manli in line 7? [1]
- 9. Identify a verb in the passive voice. [1]
- 10. Identify a reflexive pronoun. [1]
- 11. Identify a noun in the accusative case. [1]
- 12. Identify an ablative absolute from the passage. [1]

[15 marks]

Translation

Translate the following sentences into Latin.

- 1. Where did you find the money? [3]
- 2. I was sleeping in the field for a long time. [3]
- 3. We always defend the kingdom with weapons. [4]

[10 marks]

| Surname: | |
|----------|--|
| | |

First name:

Current School:



MATHEMATICS PAPER 1 SCHOLARSHIP EXAMINATION 2023

90 minutes

Instructions to Candidates

- Use BLACK ink only.
- Calculators and geometrical instruments may be used.
- Show all your working. Answers with no working may not score full marks.
- Write your answer to each question in the space following the question.

Information for Candidates

- The marks available for each question are indicated in square brackets.
- Full marks may be obtained for answers to ALL questions.
- This paper has **17** questions.
- The total number of marks available is 100.

Section A (55 marks)

- 1. $v^2 u^2 = 2aS$
 - (a) Work out S when v = 25, u = 17, a = 2.7. Show clear working before leaving your answer correct to 3 significant figures.

(b) Work out *u* when v = -7.25, a = -2.7, S = 3.3Show clear working before leaving your answer correct to 2 decimal places.

2. (a) Express as a single fraction

$$\frac{4a}{3} - \frac{a}{2}$$

(b) Express as a single fraction

$$\frac{3b}{2} - \frac{b-1}{7}$$

(c) Express as a single fraction

$$\frac{2}{c-2} - \frac{3}{c}$$

3. (a) Solve $x(x+5) - x^2 = x - 3$

x =.....(3)

(b) Solve
$$\frac{2x+1}{4} = \frac{6x-5}{3}$$

(c) Solve
$$\frac{1}{5}(2x-3) - \frac{1}{4}(5x-2) = x+1$$
 (3)

x =.....(3)

(d) Solve for the values of y if

$$\frac{1}{3}(2-y)^2 = \frac{27}{49}$$

y =.....(4)

4. (a) Factorise 15ab + 5a

-(1)
- (b) Factorise fully $18m^2 12mp$

(c) Factorise fully
$$\frac{13}{3}b^3c^2 - \frac{26}{3}b^2c^3$$

5. (a) Make z the subject of $S = ut + \frac{1}{2} zt^{2}$

(b) Make y the subject of $a = c + \frac{d}{y^2}$

y =.....(3)

(c) Consider the formula 3r = 1.8 - 4.2x

(i) Make *x* the subject of the formula.

(ii) Write your answer from part (i) in the form $\frac{a+br}{c}$ where *a*, *b* and *c* are integers to be found.

 $a = \dots, b = \dots, c = \dots$ (2)

(d) Make w the subject of a(w + 1) = 3(1 - 2w)

6. Jasmine buys 4 dining chairs and 1 table for £142 Ken buys 6 of the same chairs and 2 of the same tables for £254 What is the price of one chair? What is the price of one table?

.....(5)

7. (a) On the axes below draw y = 4x + 8 and $y = 9 - x^2$.



(3)

(b) Write down the equation of the line \boldsymbol{l} on the graph

Section B (45 marks)

8. Helen has 80 books to sell.
Each book is Fiction or Non-fiction.
The ratio of the number of Fiction books to the number of Non-fiction books is 3:1
Each book has a normal price of £10
Helen reduces the price of all the Non-fiction books.

Helen sells all 80 books.

Work out the total amount of money Helen will receive.

9. Max is saving to by a computer game that costs £26. He saves 5p, 10p and 50p coins in a jar. The ratio of 5p to 10p to 50p coins is 2 : 5 : 1. There are 120 coins in the jar. How much more does he need to save?

10. Empty cans are packed into boxed. The diameter of each can is 6cm and the height is 10cm. The measurements of the box are shown below.





Cans are packed into the box until it is full. How many cans can be packed into the box?

11. Johny sat 8 examinations. Here are his marks for 5 of the examinations. 68 80 77 72 75
For his results in all 8 examinations the mode of his marks is 80 the median of his marks is 74 the range of his marks is 16
Find Johny's marks for each of the other 3 examinations.

12. The diagram shows two squares.

The large square has a length of 10.8 cm. The small square has a length of 4.4 cm. What percentage of the diagram is shaded?

Leave your answer correct to 1 decimal place.



10.8 cm

13. Find the size of the angle marked *y*.



.....(5)

14. In the quadrilateral below AB = BC.



The perimeter of the shape is 178cm.

Find the distance AC. Leave your answer correct to 1 decimal place.

AC =.....(5)

15. The diagram shows an isosceles triangle and a rectangle.
 The area of the triangle is 2cm² more than the area of the rectangle.
 Find the perimeter of the rectangle.



......(5)

16. Mrs Silcott travels from Plymouth to Bristol via Okehampton. The journey takes her 3.5 hours in total.

The leg from Okehampton to Bristol is 10km shorter than from Plymouth to Okehampton. She averages 50km/h between Plymouth and Okehampton and 60km/h between Okehampton and Bristol.

By writing down an equation and solving it, find the distance travelled between Plymouth and Bristol.

.....(5)

17. p and q are two numbers each greater than zero.

$$\sqrt{p^2 + 4q} = 9$$
$$\sqrt{p^2 - 3q} = 5$$

Find the values of p and q.

End of Paper



Scholarship Examination 2023

Mathematics II

Time: 90 Minutes

Instructions and advice:

Write your solutions on lined paper, using blue or black ink or pencil. Calculators, geometric instruments (protractor, set square, compass etc.) and squared paper may NOT be used.

Write on only one side of the paper and start your answer to each question on a fresh sheet. Make sure the question number and your name are clearly written on each sheet.

This paper is designed to be very challenging.

Very few (if any) candidates should expect to finish it. Greater credit will be given for a smaller number of complete solutions to some of the questions rather than a larger number of incomplete attempts.

You do not need to attempt the questions in the order in which they are presented (indeed, you are advised to first read all the questions then start by attempting those with which you feel the most comfortable).

You must show all your working and explain all your reasoning.

PLEASE NOTE: This paper is <u>not just about getting the right answers</u>; correct answers on their own will earn few marks. You will be marked more on the <u>PRESENTATION</u> of your solutions, the <u>EXPLANATION</u> of your working and the JUSTIFICATION of your final answers.

- **1.** You are given that $7 \times 11 \times 13 = 1001$.
 - a. Using this fact, find the value of:
 - i. $77 \times 11 \times 13$ ii. $30.03 \div 0.77$ iii. $14 \times 22 \times 26$ iv. $\frac{1}{7} + \frac{1}{11} + \frac{1}{13}$
 - b. Arun invested some money over a three-year period. In the first year, the value of his investment increased by 30%. In the second year, its value increased by 10%. In the third year, the value *decreased* by 30%. Determine the overall change in value of his investment.
 - c. Determine which is larger out of A and B, where

 $A = 49 \times 121 \times 169$, and $B = 77 \times 143 \times 91$

NB in this question you will earn comparatively few marks if you work out these values directly.

2. In this question, you are given that $Density = \frac{Mass}{Volume}$.

Metal A has a density of $15g/cm^3$ and metal B has a density of $9g/cm^3$. Metal C is an alloy which is made by mixing equal weights of metals A and B.

a. Find the density of metal *C*. *NB this is not 12g/cm³.*

Arvind made a quantity of metal C. When doing so, he used 240 cm^3 more of metal B than he did of metal A.

- b. Find the total volume of metal *C* that Arvind made.
- 3. Vincent and five of his friends have a big tub of sweets that they are going to share between each other. Vincent realises that, if they try to share them out so that everyone has the same number of sweets, there will be one sweet left over.

Then Vincent's friend Arthur arrives. Vincent notices that, if they include Arthur and again try to share the sweets out equally, there will still be one sweet left over.

Then Vincent's other friend, Ushma, arrives. Now, when they try to share the sweets equally among themselves, they find they are one sweet short.

What is the smallest number of sweets they could have in total?

- **4.** In this question, we will define a *nearly prime* number to be a number which is the product of exactly two different prime numbers. For example,
 - 7 is not nearly prime (because it is prime)
 - 8 is not nearly prime (it is the product of three primes $-2 \times 2 \times 2$)
 - 9 is not nearly prime (it is the product of two primes but they are not different)
 - 10 is nearly prime (2 \times 5).
 - a. Find two consecutive numbers which are both nearly prime.
 - b. Find three consecutive numbers, each of which is nearly prime.
 - c. Is it possible for there to be four consecutive numbers which are all nearly prime? Explain your reasoning carefully.

5. In any triangle, the interior and exterior angles of each vertex is defined as follows:



- a. Explain briefly how we know that the exterior angles of any triangle add up to 360°.
- b. The exterior angles of a triangle are in the ratio 2:3:4. Find all three of its interior angles.
- c. The exterior angles of a triangle are in the ratio 3:4:5. Find the ratio of the length of the longest and shortest sides of the triangle.
- d. Explain why is not possible for the exterior angles of a triangle to be in the ratio 1:2:3.
- 6. For any list of positive whole numbers, we can define the following quantities:
 - A = the total when we **add** all the numbers in the list together
 - M = the total when we **multiply** all the numbers in the list together
 - n = the total number of numbers in the list
 - So, for example, for the list of numbers [2,3,3,5], we have A = 13, M = 90 and n = 4.
 - a. For the list of numbers [3,4,9], write down A, M and n.
 - b. A list of numbers has A = 7 and n = 3. Write down all the possible values of M.
 - c. A different list has M = 6. Explain why there are infinitely many possible values of A.
 - d. For a particular list, M is a prime number. What is the relationship between A and n?
 - e. Edward writes down a list of numbers, none of which is one. He tells his friend Karamvir the value of *M*, which is 84, and the value of *A*.
 From this information, Karamvir cannot work out what Edward's list of numbers is.

What is the value of *A*? Explain all your reasoning carefully.

- **7.** Estimate, to one significant figure, how many miles you will walk in your lifetime. You should state any assumptions that you make and explain all your reasoning.
- ABCD is a square. The point P lies inside the square and the point Q lies outside the square. ABP and BQC are both equilateral triangles.
 Prove that the distance between P and Q is equal to the distance between B and D.

There are no questions printed on this page.



Philosophy and Applied Ethics Scholarship Examination 2023

75 minutes

You have 30 minutes to read through Michael Wilcockson's 'Euthanasia and Doctor's Ethics' (1999) and then 45 minutes to answer the question.

Candidates may make notes and use a highlighter on the reading material, but they may not be given writing paper to answer the questions until the 30 minutes is up.

Use blue or black ink for text.

Michael Wilcockson, 'Euthanasia and Doctor's Ethics' (1999)

Taken from: *Issues of Life and Death* by Michael Wilcockson (Hodder, 1999), Chapter 4, Euthanasia and Doctors' Ethics, pp.56–69.

1. Good or bad medical practice?

A 'third party' in law refers to any agent other than the principal agent and in the case of euthanasia this would generally mean a doctor (sometimes also referred to as the 'physician'). For all practical purposes if euthanasia is to be justified at all it has to be considered as part of medical practice, for it is reasonably clear that any other practice of euthanasia would be almost impossible to control or regulate. Without regulation society would permit killing or murder and whatever moral code one adopts would be regarded as untenable. The consideration of 'euthanasia', at present, is rightly a medical issue. Put simply it is this: should a doctor kill his patients in some circumstances?

The official position of the British Medical Association, for instance, suggests that there is a great deal of difference between actively terminating life and treating a patient in a manner which may in the end result in death.

In its ethical advice the BMA emphasises that it is the duty of a doctor to ensure that a patient dies with dignity and as little suffering as possible but recommends that active intervention to terminate life – that is, where drugs are given or other procedures, carried out in order to cause death – even at the request of a patient, should remain illegal.

The Rights and Responsibilities of Doctors (1992), p.77

a) Moral crisis in liberal societies

Why does the issue of euthanasia (and abortion) cause such heated debate at present? Peter Singer has argued (1994) that Western liberal societies are going through a transitional stage in ethics at present where the authority of the traditional 'Sanctity of Life' argument (SOL) is giving way to the liberal 'Quality of Life' argument (OOL). The liberal influence has already been seen in many acts of legislation, notably in the case of suicide, where the principle of personal autonomy is the fundamental principle underpinning moral and legal decisions. Singer suggests that the SOL belongs to an older more absolute value view of life but with the demise of Christianity the philosophical basis which establishes life as a gift from God or part of a Natural Law can no longer be sensibly sustained. So, while the changeover takes place there will be those who strenuously wish to oppose what they see as a corrosive force. Whilst Singer's argument may have much more to commend it we should also bear in mind that the SOL as much as the QOL argument both have to contend with the increasing technological and medical complexity. Whereas in the past pneumonia was considered to be the old person's friend or a severely brain-damaged child would have died through natural causes, the doctor now has the means to sustain a life which in the past simply would not have been a possibility. Whilst the moral basis for sustaining life and allowing death is in transition, the medical profession and legislators will continue to inspire strong reactions.

b) Three moral principles

Three principles presuppose that the doctor is working from the traditional SOL position enshrined in the part of the Hippocratic Oath which states 'I will give no deadly medicines to anyone if asked, nor suggest any such counsel' (BMA *Handbook*, p.69). Each of these principles depends on making a distinction between *direct* and *indirect* killing, i.e. **active euthanasia** or **passive euthanasia**. In the latter case there is some dispute whether the term 'euthanasia' is really appropriate.

i) Acts and omissions

If A chooses to shoot B then we classify this as an intended act; if C sees A and fails to stop A shooting B then this is an intended omission. The point is whether C is at all blameworthy. In this incident, if C is a pacifist they might well justify their action by appealing to a negative responsibility, i.e. by failing to act they were morally blameless. They might even argue that refraining from acting took a great deal of moral courage. But however one looks at it, C was prepared to condone the death of B and accept whatever the consequences this might entail. Some object to this. Can I be held responsible for failing to help stop the deaths of thousands dying in poverty in the Third World? Perhaps the notion has to be couched in such terms as 'I am only responsible when I am reasonably in a position to do something'. In other words some 'omissions' are regarded as 'acts'. The Roman Catholic Church states:

> Thus an act or omission which, of itself or by intention, causes death in order to eliminate suffering constitutes a murder gravely contrary to the dignity of the human person and to the respect due to the living God, his Creator. The error of judgement into which one can fall in good faith does not change the nature of this murderous act, which must always be forbidden and excluded.

> > Catechism of the Catholic Church (1994), p.491.

The problem is particularly acute with premature babies. If a baby is born very prematurely a doctor might have to consider whether they have a duty to save the baby. Some argue that morally they may *withhold* treatment either as a form of passive euthanasia (a form of **non-voluntary euthanasia**) or simply 'letting nature take its course'. Morally if they engage in treatment and *then* decide to *withdraw* treatment on the grounds that the baby will no longer have a worthwhile life, it may no longer be considered indirect killing but an act of active non-voluntary euthanasia or murder (See Singer, *Rethinking Life and Death*, 1994, pp.75-80 for examples and discussion.)

ii) Double effect

Another *indirect* argument has a long tradition in Natural Law ethics and involves two kinds of intention. According to the double effect (DDE) argument there is a difference between foreseeing an event and directly intending or *willing* it to happen. The emphasis, therefore, is different from the act and omissions argument where the agent foresaw what was to happen and allowed it to happen. For instance, A defend themselves against an attack from B using reasonable force. They know that this *might* result in B's death but it is not their intention that this should happen. If B then dies as a result of A's defence the DDE does not hold A to be blameworthy for an act they did not intend. In Case 3 a doctor who subscribes to the DDE might argue that the principle is sound medicine (and as a wellestablished principle in Natural Law ethics it is therefore acceptable in Roman Catholic theology). However, the term 'euthanasia' is resisted in the same way that 'abortion' is avoided for similar reasons. But is the DDE open to abuse?

• Is there a satisfactory distinction between intending and foreseeing? Might one say that the DDE is *bad* medicine, that if I foresee death but fail to act, then this is an omission which is a form of indirect euthanasia – which is rejected by the SOL?

iii) Ordinary and extraordinary means.

The principle of ordinary and extraordinary means is used both by weak SOL (WSOL) arguments and QOL proponents. Another, possibly better way of considering the issue is in terms of *proportionate* and *disproportionate* means.

- In the Natural law tradition a person who refuses food and water in order to die has deliberately committed suicide which is condemned in Roman Catholic theology as a mortal sin. But a person is within their rights to refuse surgery on grounds that it is over and above what is needed ordinarily for bare existence. The BMA for instance say, 'competent patients have a right to refuse any treatment, including life-prolonging treatment' (*Medical Ethics Today*, 1993, p.149). Nature is allowed to take its course. The doctor is not involved in the *direct* cause of death of the patient. Those who criticise this suggest it is a form of passive euthanasia or even assisted suicide. For instance, if a doctor withholds life-sustaining treatment, against his or her better judgement, but through respect for patient autonomy, the result might be condemned either as an act of professional negligence or wilful killing.
- On the other hand, some argue that it is a doctor's professional duty to use whatever medicines are available regardless of the situation. A response to this might be to think in terms of *proportion* as an alternative variation of extraordinary means. Proportion is a well-established principle in the Natural Law tradition which may be applied to medicine without compromising the obligation of the doctor to treat his or her patient. This enables each situation to be seen individually so that what might be considered proportionate to achieve good ends is contingent on the needs of the patient and even the *resources* of the doctor. The issue is particularly complex with non-competent

patients. For instance, a very handicapped baby (for example one who is 'anacephalic' or with a major part of the brain missing) might be considered so ill that no amount of surgery would improve their condition significantly. In this case a doctor might then prescribe 'nursing care only' (the baby should be kept warm and fed) as proportionate to their needs, knowing that the baby will die shortly.

- The WSOL argues that where death is inevitable the doctor is bound by *compassion* or love to treat the patient accordingly. This attitude is summarised by the much quoted phrase, from Arthur Clough's poem: 'Though shalt not kill: but need'st not strive Officiously to keep alive'. Singer (*Rethinking Life and Death*, 1994, p.149) goes further. Rigid adherence to the doctrine never to kill (vitalism) is an abrogation of the doctor's responsibility to his patient. The question is not so much between ordinary and extraordinary means but whether, in some cases, direct termination of life is good medicine.
- In QOL the key factor is whether the use of extraordinary medical means would usefully promote the quality of life. The notion is essentially utilitarian. For instance, in Cases 4 and 6 above a number of factors all need consideration: the possible length of useful life; state of mind of the patient (a main consideration in the American QALYS or Quality Adjusted Life Year Schedules); resources needed and available. All these factors contribute towards making doctors' choices. For instance a doctor might have to weigh up whether very painful surgery or powerful drugs which cause permanent drowsiness would result in a person who is a shadow of their former self. Can he or she base his or her judgement on some minimum human life-standard? For instance John Finnis's 'basic goods' argument suggests a possible list of 'valuable' life criteria which include: play, aesthetic experience, sociability; but inevitably there is no agreement as to what these standards should be.

2. Law and morality

So far the discussion has centred on the doctor-patient relationship within the constraints of law. There is no doubt that a shift in public opinion has increased the pressure for reform especially for voluntary euthanasia, whilst the Bland case sets a precedent for severely brain-damaged patients.

a) The liberal model

Mill's essay *On Liberty* (1859) is often cited as an example of the way in which law should function in a liberal society.

- The principle is that law is *not in itself* a moral guideline. Law in a liberal society acknowledges that each person has his or her own preferences which, using the utilitarian principle, if satisfied lead to the greatest happiness. The law enables the greatest personal autonomy of the greatest number.
- The second function of law is to protect the individual. This limits the majority from exploiting the minority and also the minority form exercising too much sway over the majority. Law should have minimal interference.

In practice, though, the law has to take into account a general moral feeling and it has also to acknowledge that once legislation take place, in the mind of many this is seen to give tacit approval to certain forms of behaviour. Bernard Williams has described this as the *precedent effect* (Smart and Williams, *Utilitarianism*, 1973, p.106). Others more fearfully think in terms of a slippery slope or the thin end of the wedge. If, for instance, voluntary euthanasia were to be permitted under the law this would inevitably permit other forms of illicit killing. The British Medical Association is adamant that euthanasia should not become law:

Doctors have a duty to try to provide patients with a peaceful and dignified death with minimal suffering, but the BMA considers it contrary to the doctor's role deliberately to kill patients, even at their request. In the BMA's view, liberalising the law on euthanasia would herald a serious and incalculable change in the ethos of medicine.

Medical Ethics Today (1993), pp.175, 177

b) The case for legalising euthanasia

The two principles frequently cited are personal autonomy (and rights) and QOL. The argument is further enhanced by citing those countries/states where some form of euthanasia is permitted.

i) Britain

Euthanasia is only an extension of what is permissible as suicide. The 1961 Suicide Act in the UK for instance permits personal autonomy to choose without recrimination (in the case of attempted suicide) but forbids third-party involvement. Here is an argument typical of this kind of reasoning (Janet Radcliffe, *The Guardian Weekly*, September 1992):

The problem with voluntary euthanasia has nothing to do with the dangers of letting doctors decide whether patients live or die... The real question is quite different. It is whether people who are trapped in bodies or an institution they cannot control should be allowed to make choices freely available to the rest of us...Why... If you take a housebound friend shopping no one accuses you of kidnapping, if you cook her a meal no one thinks you are force-feeding her. Why then, if she is in agony or despair, and you bring her the lethal dose she desperately wants but cannot get, or you manipulate the syringe because she is too weak to do it herself, do you find yourself guilty of one of the worst crimes there is?

But the 1961 Suicide Act makes it illegal to aid or give assistance in a suicide. Those who argue for a change in the law cite the shift in popular support and demand for voluntary euthanasia from 51 per cent in 1969, 69 per cent in 1976, 75 per cent in 1989 to 82 per cent in 1996. The British Medical Association though still strongly opposes any change on the grounds that it will irrevocably alter the patient-doctor relationship.

ii) The Netherlands

Often people argue that voluntary euthanasia arrangements should be brought in line with the principles determining legal abortion. The situation in the Netherlands

is frequently referred to because it most clearly expresses the balance between the popular will, medical practice and legal control. (For a full account see Singer, *Rethinking Life and Death*, 1994, pp.143–7). The case is for physician-assisted suicide.

- Mercy killing is illegal, but where there is a *conflict of duties* between the doctor's medical ethics and the demands of the patient euthanasia may be permitted (the key issue therefore is that of conflict of duties.)
- Only a medical practitioner may be permitted to carry out euthanasia.
- The patient must make his or her request to die persistently and explicitly.
- The patient's request must be freely made, well-informed and without coercion.
- The patient's condition must be one where there is no foreseeable room for improvement and where there is unbearable pain. All other alternatives for relieving pain should have been considered.
- A doctor should seek advice and second opinion of another independent doctor.
- The Dutch parliament regularised this procedure in 1993. The doctor must report his or her action to the public prosecutor who then judges each situation case by case. A doctor may be prosecuted if the above criteria have not been adhered to.

iii) The USA

In the USA the movement is towards 'proxy empowerment' and developing the use of living wills. The movement is towards physician-assisted suicide. Physicianassisted suicide is strongly resisted by the pro-life movement.

iv) Australia

In Australia there is no uniform law; however, a doctor may discontinue life-support at the request of the patient. This does not constitute, for the purposes of law, assisted suicide. In the State of Victoria an act of 1988 permits a person to appoint a proxy. In South Australia a person may use an advance directive under the 1983 Natural Death Act refusing 'extraordinary treatments' should they become incapacitated.

c) Objections to legalising euthanasia

One of the primary objections to legalising euthanasia has been the slippery slope or wedge argument. The wedge argument is based on a form of logic which argues that what may be permitted initially as an *exception becomes the rule*. This is borne out by the observation that:

- there are always those who exploit a weaker rule
- what begins with the best of intentions results in undesirable ends.

Not surprisingly the wedge argument is supported by those who wish to uphold the SOL, those who have a strong deontology (that rules must be obeyed) and genuinely feat that expectations are not in the end in people's best interests. The BMA cites (*Medical Ethics Today*, p.153) the situation in the Netherlands where some 1000 (or 0.8 per cent) of all deaths a year are the result of non-voluntary euthanasia.

Helga Kuhse challenges proponents of the wedge argument to provide empirical evidence to support their case. Her own conclusion is that the wedge argument is used by scaremongers to support their complete ban on all forms of euthanasia. The most frequently cited example of the wedge argument is the active non-voluntary euthanasia practised by the Nazis during the Holocaust years as a form of *eugenics* (literally 'the production of good offspring') where the deaths of millions were justified as part of the improvement of society. Kuhse concludes:

> whilst the Nazi 'euthanasia' programme is often cited as an example of what can happen when a society acknowledges that some lives are not worthy to be lived, the motivation behind these killings was neither mercy nor respect for autonomy; it was, rather, racial prejudice and the belief that racial purity of the *Volk* required the elimination of certain individuals and groups. As already noted, in the Netherlands a 'social experiment' with active voluntary euthanasia is currently in progress. As yet there is no evidence that this has sent Dutch society down a slippery slope.

> > 'Euthanasia', in P Singer (ed). Companion to Ethics (1991), p.302.

The SOL deontological response is to point to a number of recent liberalisations in the law which illustrate the wedge taking effect. For instance, abortion in the UK is illegal but is permitted in extreme cases. Since 1967 (when the Abortion Act was introduced in England and Wales), the large number of abortions for 16–24-year-olds suggests that 'exceptions' (e.g. threat to psychological life of the mother) are effectively being used as a form of birth control. Many people now think that abortion is legal and in practice an abortion is usually given on demand. Another example might be the liberalising of the divorce laws and the decline of the family.

Finally, as we have already seen, there are those who argue that legalising euthanasia would not promote patient autonomy but in fact reduce it. Legislation would do irreparable harm to doctor-patient relationships and destroy the trust which is essential if a doctor is going to be able to administer the right kind of care. The following extract from the British Medical Association illustrates the point:

> We have consistently emphasised the importance of patient autonomy and rights, reflecting the weight society assigns to individual freedom of choice. Supporters of a right to die often present this issue as one of personal liberty, maintaining that therefore individuals should be entitled to assistance to end their lives at the time and in the manner they choose. The BMA, however, maintains that autonomy has limits. The rights of one group cannot be permitted to undermine the rights of others. Recognising a legal right to die would have implications for the whole of society and, perhaps, most particularly for its vulnerable members.

Thus many doctors fear that even a limited change in legislation would bring about a profound change in society's attitude to euthanasia. By removing legal barriers to the previously 'unthinkable' and permitting people to be killed, society would open up new possibilities of action and thus engender a frame of mind whereby some individuals might well feel bound to explore fully the extent of these new options. Once previously prohibited action becomes allowed, the argument goes, it may also come to be seen as desirable – if not by oneself, then as something which might be recommended. A social environment which recognised the right to die, we argue, would bring about a fundamental shift in social attitudes to death, illness, old age and disablement. It would encourage the labelling of people by group and result in some groups who presented problems being seen as more expendable. It would also change the public view of the profession in an irrevocable way and undermine the trust that patients have in doctors.

Medical Ethics Today (1993). P.151.

Question:

'Politicians shouldn't consider legalising euthanasia'.

Evaluate this view.

In your answer you should:

- make references to the text above;
- give reasoned arguments to support this statement;
- give reasoned arguments to support a different point of view; and
- reach a justified conclusion.



13+ Scholarship Science Examination 2023

Name (PRINT):

| Section | Score |
|---------|-------|
| А | / 25 |
| В | / 20 |
| С | / 17 |
| D | / 18 |
| Total | / 80 |
| % | |

Instructions

- You have **2 hours** to answer all questions.
- Use the Multiple Choice Answer Grid on the last page for Section A. Print full name on the answer grid sheet. Detach during exam if needed, then recombine if possible.
- Section A consists of 25 multiple choice questions. You must select the best answer, A-D, for each question and mark your answers using a pencil on the separate Multiple Choice Answer Grid provided.

- Sections B, C and D should be answered on the examination paper.
- You should spend approximately 30 minutes on each section.
- Use blue or black ink for text.
- You may use a pencil and a ruler for diagrams.
- You may use a calculator.

Section A: Multiple Choice

1.

A length of string is measured between two points on a ruler.



When the length of string is wound closely around a pen, it goes round six times.



2.

Two objects P and Q are placed in a beaker containing a liquid.

Object P floats in the liquid and object Q sinks.

Which row for the densities of object P, object Q and the liquid is possible?

| | $\frac{\text{density of object P}}{\text{g/cm}^3}$ | $\frac{\text{density of object } Q}{g/cm^3}$ | $\frac{\text{density of liquid}}{\text{g/cm}^3}$ |
|---|----------------------------------------------------|----------------------------------------------|--------------------------------------------------|
| Α | 1.2 | 0.6 | 0.8 |
| В | 1.2 | 1.4 | 1.0 |
| С | 11.3 | 8.9 | 13.6 |
| D | 11.3 | 19.3 | 13.6 |

3.

Which source of energy is renewable?

- A coal
- B natural gas
- **C** oil
- D wind

4.

A student hangs different loads on a spring.

The diagrams show the lengths of the spring with different loads.



Which row gives the correct extensions of the spring?

| | extension/cm when the load is 0N | extension/cm when the load is 2.0 N | extension/cm when the load is 4.0 N |
|---|-------------------------------------|----------------------------------------|----------------------------------------|
| Α | 0 | 3.0 | 3.0 |
| В | 0 | 3.0 | 6.0 |
| С | 3.0 3.0 3.0 | | 3.0 |
| D | 3.0 | 6.0 | 9.0 |

5.

A glass bottle has a metal cap. The cap fits very tightly and is difficult to remove.

The cap and the neck of the bottle are lowered into a bowl of hot water. The cap can be removed more easily.

What happens to allow the cap to be removed more easily from the bottle?

- A The metal cap contracts.
- **B** The metal cap expands.
- C The glass bottle contracts.
- **D** The glass bottle expands.

6.

The diagram shows an electric circuit.



When the switch is open, which lamp(s) are not lit?

- A R only
- B S only
- C R, S and T
- D S and T only

7.

The speed of radio waves travelling in a vacuum is 3.0×10^8 m/s.

A remote-controlled vehicle is travelling on the surface of a planet. The vehicle senses an obstacle ahead. It sends a radio message to the control room from where it is being controlled. The control room is 2.4×10^6 km away from the vehicle. The control room sends a message back to the vehicle telling it to stop.

What is the minimum time that elapses between the vehicle sensing the obstacle and receiving the message back from the control room?

A 8.0 ms **B** 16 ms **C** 8.0 s **D** 16 s

8.

What is the minimum length of mirror required to see your full height in the mirror all at once?

- **A** twice your full height
- **B** equal to your full height
- **C** half your full height
- **D** any length mirror is fine

9.





10.

The masses of several different samples of materials are recorded and the mass is plotted against the density of the sample (see below). The samples are labelled 1 to 5. Which two samples have the same volume?



- A 1 and 2
- **B** 4 and 5
- **C** 3 and 4
- **D** 1 and 4

Questions **11** and **12** are based on the table which gives the pH of 4 different soft drinks.

| Drink | pH value |
|-----------|----------|
| Coca-cola | 2.6 |
| Milk | 6.7 |
| Sprite | 3.3 |
| Dr Pepper | 2.9 |

- **11.** The most acidic drink listed in the table is:
- A Coca-cola
- B Milk
- **C** Sprite
- **D** Dr Pepper
- **12.** A student used the pH meter to investigate how the pH value would change upon making a mixture of two acids. How would you expect the pH value of Sprite to change if Dr Pepper was added to it? The value would:
- A stay the same
- **B** increase
- **C** decrease
- **D** it depends on how much is added.
- **13.** A small amount of fuel was burned on a floating dish. The volume air before burning was 114cm³.



We would expect the volume of gas that remained in the jar after burning had finished to be

- **A** 17.1cm³
- **B** 22.8cm³
- **C** 51.3cm³
- **D** 91.2cm³

Questions **14**, **15** and **16** are based on the reaction shown below in which 210g of sodium bicarbonate was reacted with a minimum of 91.25g of acid

 $NaHCO_3 + HCI \rightarrow NaCI + H_2O + CO_2$

14. This produced 146.25g of sodium chloride and 45g of water. What mass of carbon dioxide would you expect to be released?

- **A** 58.5g
- **B** 117g
- **C** 91.25g
- **D** 110g

15. Why might the mass be less than expected?

- A Carbon dioxide is a gas so some might have escaped or the solid did not react completely.
- **B** The solid did not react completely or the acid was stronger than expected
- **C** Water started to evaporate in the warmth of this reaction lowering the mass of water in the container.
- **D** None of the above

16. What type of reaction is this?

- A Redox
- **B** Combustion
- **C** Neutralisation
- **D** Displacement
Questions **17** and **18** are based on the graph below. A digital thermometer was used to measure the changing temperature of water. Heat was allowed to escape from the water.



17. What is represented by the horizontal line marked A?

- A Solid
- B Melting point
- **C** Liquid
- **D** Sublimation point

18. Why does the temperature of the water remain constant at this section?

- A The digital thermometer was not calibrated properly before use
- **B** This is known as a systematic error so is not a fair test
- **C** The scale on the graph was too small
- **D** Energy is being used to form attractions/ bonds between particles instead of being lost to the surroundings.
- **19.** Wildebeest feed on grass and lions feed on wildebeest. Which word correctly describes the wildebeest in this food chain?
- A Predator
- B Omnivore
- **C** Producer
- **D** Herbivore

- **20.** What did the scientists James Watson, Francis Crick and Maurice Wilkins receive the Nobel Prize for in 1962?
- A Formulating the theory of evolution by natural selection
- **B** Discovering the molecular structure of DNA
- **C** Working out the pattern of inheritance of genes
- **D** Inventing DNA fingerprinting
- **21.** Which statement correctly describes the net (overall) gas exchange if a plant is carrying out more photosynthesis than respiration?
- A Uptake of carbon dioxide
- **B** Uptake of oxygen
- **C** Production of nitrogen
- **D** Production of carbon dioxide
- **22.** Which of these animals is not an amphibian?
- A Turtle
- **B** Frog
- **C** Salamander
- D Newt
- 23. What term correctly describes the skin (shown below):
- A Cell
- **B** Tissue
- **C** Organ
- **D** Organ system



24. What type of doctor treats conditions that affect the skin?

- A Oncologist
- B Haematologist
- **C** Dermatologist
- **D** Gastroenterologist

25. What is the correct order of bones in the leg from the hip to the foot?

- A femur \rightarrow patella \rightarrow tibia \rightarrow tarsal
- **B** patella \rightarrow femur \rightarrow tarsal \rightarrow tibia
- **C** tibia \rightarrow patella \rightarrow femur \rightarrow tarsal
- **D** tarsal \rightarrow patella \rightarrow femur \rightarrow tibia

[Total: 25]

13+ Scholarship 2023 Science Examination Multiple Choice Answer Grid

Name (PRINT):

Please ring the correct answer in pencil (so that you can rub it out if you change your mind).

| Question | | Answer | | | |
|----------|---|--------|---|---|--|
| 1. | Α | В | С | D | |
| 2. | Α | В | С | D | |
| 3. | Α | В | С | D | |
| 4. | А | В | С | D | |
| 5. | А | В | С | D | |
| 6. | А | В | С | D | |
| 7. | Α | В | С | D | |
| 8. | А | В | С | D | |
| 9. | А | В | С | D | |
| 10. | Α | В | С | D | |
| 11. | А | В | С | D | |
| 12. | Α | В | С | D | |
| 13. | А | В | С | D | |
| 14. | А | В | С | D | |
| 15. | А | В | С | D | |
| 16. | А | В | С | D | |
| 17. | А | В | С | D | |
| 18. | А | В | С | D | |
| 19. | А | В | С | D | |
| 20. | А | В | С | D | |
| 21. | А | В | С | D | |
| 22. | А | В | С | D | |
| 23. | A | В | С | D | |
| 24. | Α | В | С | D | |
| 25. | Α | В | С | D | |

Section B: Experimental Design



A scientist is trying to understand meteor impacts forming craters on a planet or moon. To help them, they decide to investigate the size of the crater (hole) a ball makes when it is dropped into sand.

They start by getting together the following apparatus:

- metal balls of different sizes
- a tray of sand

Part A

The scientist decides to begin by investigating **one** factor that affects the size of the crater.

 How do you think the scientist should determine the 'size' of the crater? Include any measuring instruments they should use in your answer. (2)

| 2. | Suggest a factor which may affect the size of the crater which you think they should investigate. | (1) |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| | | |
| 3. | What measuring instrument should the scientist use to measure the factor you suggested in question 2 above? | י (1) |
| | | |
| 4. | State a factor that should be kept the same (constant) to ensure that it does ne affect the size of the crater. | ot (1) |
| | | |
| 5. | Explain briefly how you would carry out the experiment. Use bullet points to structure your answer clearly and include any further equipment that may be necessary as well as how the measurements should be made. | (4) |
| | | |
| | | |
| | | |
| | | |
| | | ••• |
| | | •••• |
| | | |

6. What do you think the outcome of this experiment will be?

.....

Part B

In another experiment, the scientist is investigating the 'time period' of a pendulum. This is the time the pendulum takes to make one complete oscillation. A picture of the apparatus they use is shown to the right.



(1)

7. The length, *d*, of the pendulum is the distance from its top end to the centre of the 'bob'. Explain briefly, with the help of a diagram, how you would use a ruler to measure *d* as accurately as possible.(3)

Diagram:

8. The scientist adjusts the pendulum so that d = 50.0 cm. They pull the bob to the side slightly and release it so that it swings. The picture below on the left shows one complete oscillation of the pendulum. They measure the time for 20 complete oscillations. The picture below on the right shows the time.



(i) Record the time shown on the stopwatch (1)

time = seconds

(ii) Calculate the time period of the pendulum. The time period is the time for one complete oscillation. (1)

period = seconds

9. The scientist adjusts the pendulum until the distance *d* is 100.0 cm. They repeat the procedure and record the time for 20 oscillations and the time period for this new length. Their results are:

time for 20 oscillations = 39.80 s

time period of the pendulum = 1.99 s

They also measure the mass of the pendulum bob. The reading on the balance is shown in the picture below.



Record the mass of the pendulum bob to the nearest gram.

mass = grams

(1)

The scientist repeats the procedure using a pendulum bob of mass 109 g. For this bob they obtain these results:

| distance d (cm) | time for 20 oscillations (s) | time period (s) |
|-----------------|------------------------------|-----------------|
| 50.0 | 27.80 | 1.39 |
| 100.0 | 40.40 | 2.02 |

- 10. (i) Using the results for the periods of *all* of the pendulums the scientist investigated, circle the response (A, B, C, or D) that matches the scientists results best.
 - A the time period is affected by *d* only
 - **B** the time period is affected by both *d* and the mass of the bob
 - **C** the time period is affected by the mass of the bob only
 - **D** the time period is not affected by either *d* or the mass of the bob

(ii) Justify your answer to 10.(i) by referencing the results. (1)

11. The scientist now investigates the effect of the *size* of the oscillations on the time period of the pendulum. Suggest briefly how the scientist might measure the size of an oscillation. You may draw a diagram.(2)

[Total: 20]

Section C: Data Analysis

- **1.** Methane is a common fossil fuel.
 - a. Methane (CH₄) can be burned in oxygen to produce carbon dioxide and water.
 Write a symbol equation for the reaction. (2)



2. Ethanol and biodiesel are renewable fuels so are considered to be better for the environment than fossil fuels such as methane. They are liquids at room temperature. The amount of heat released when liquid fuel is combusted (burned) can be measured using this apparatus:



The liquid fuel is placed in a glass burner. It is absorbed by the wick and burned. The heat of the flame is used to heat exactly 100g of water, contained in the beaker above. The temperature of the water can be measured using a thermometer. An experiment is carried out to compare the heat released by ethanol and biodiesel

a. State two variables that must be remain constant during this experiment. (2)

| 10 |
|----|

b. (i) Identify a problem with this apparatus that prevents the experiment accurately measuring the heat released by the fuel. (1)

(ii) Looking at the apparatus why might the mass of water not remain constant during this reaction? (1)

c. Data recorded during the experiment:

| | Ethanol | Biodiesel |
|-----------------------------------------------------|---------|-----------|
| Mass of burner, fuel before heating / g | 19.9 | 18.3 |
| Mass of burner, fuel after heating / g | | 19.4 |
| Mass of fuel burned / g | 1.2 | 1.1 |
| Temperature of the water before the experiment / °C | 20.1 | 20.1 |
| Temperature of the water after the experiment / °C | 40.5 | 41.1 |
| Temperature rise of the water / °C | 20.4 | |

(i) Complete the table.

The amount of heat produced by fuels can be calculated using this formula:

Energy released (Joules) = 4.2 x (mass of water) x (temperature change of water)

- (ii) Calculate the energy <u>released by ethanol</u> in this experiment. (1)
- (iii) The student calculated that biodiesel released 7938J. Show by calculation this implies the incorrect mass of water was used.

(2)

(1)

(iv) Using your answers to part (ii) and (iii), determine how much energy is released when only 1.00g of each fuel is combusted?

| Ethanol: | | (1) |
|------------|--------------------------------------------------------------------|-----|
| Biodiesel: | | (1) |
| (v) | Explain which fuel is more efficient, in terms of energy released. | (1) |
| | | |

 d. Fuels with smaller molecules burn more efficiently than larger molecules. When making fuels for vehicles, the larger molecules are broken into smaller ones. Complete the equation, writing the formula of <u>one</u> more product molecule.
 (1)

 $C_{15}H_{32} \rightarrow 3 C_2H_4 + C_4H_{10} +$

e. Hydrogen is a fuel that could potentially be used to power vehicles. Why is using liquid petrol or diesel as a fuel in our cars still far more practical than hydrogen?
(2)

[Total: 17]

Section D: Comprehension



Red squirrels are small mammals that live in woodlands. They have red-coloured fur and long bushy tails. They live in nests, called dreys, that they make out of twigs in the fork of a tree. They are mostly herbivorous, feeding on nuts and berries. In the autumn, when this food is plentiful, the squirrels hide food in 'caches' that they make in the ground or in holes in trees to feed on during winter when food is scarce. Breeding females give birth in spring and in good years may produce a second litter in the summer. Their main predators are birds of prey such as buzzards and goshawks plus mammals such as pine martens.

Red squirrels were common in the UK until a different species, the grey squirrel, was introduced from America in 1876. The grey squirrel flourished, spreading across the UK, outcompeting the red. Consequently, there are estimated to be only 140 000 red squirrels left in the UK, compared to 2.8 million grey squirrels. The reds are now restricted to areas in the north of the UK and islands such as Anglesey and the Isle of Wight.

Grey squirrels outcompete reds for food. They eat a greater variety of foods, including mature acorns, which reds cannot digest, and raid the caches of reds in winter. It is only in pine forests, where the lighter reds can reach and eat the seeds from pine cones, that reds are more successful than greys. Another reason for the decline in red squirrels is that greys carry a virus that causes a disease called squirrelpox. The greys do not suffer from the disease but they can transmit the virus to red squirrels which usually die once they are infected.

The increase in the number of grey squirrels is having a harmful effect on other members of the woodland community that are poorly adapted to withstand their presence. Grey squirrels damage trees by stripping their bark and harm bird populations by eating eggs and chicks that they find in nests.

The Forestry Commission is an organisation in the UK trying to develop a long-term conservation strategy to save the red squirrel from extinction in the UK. It is hoped that this work will help to restore the UK's native biodiversity.

 Based on the information above, draw a food chain with three organisms that includes the red squirrel. (2)

.....

Explain why squirrels that have access to more food, especially nuts, are more likely to survive winter and breed successfully in the spring. (5)

3. Suggest how you could estimate how many red squirrels are living in a forest. (2)

4. For every red squirrel in the UK, how many grey squirrels are there? Show your working. (2)

Answer =

5. Suggest what measures should be included in the Forestry Commission's long-term conservation strategy to save the red squirrel from extinction. (5)

6. Do you believe it is worth trying to conserve the red squirrel in the UK? Explain your answer. (2)

[Total: 18]