Eton College King's Scholarship Examination 2005

GENERAL 1   (One and a half hours)

*Answer **all** the questions. Each question is worth 25 marks.*

You need not answer the questions in the order set, but you must start each one on a separate piece of paper. If you have not finished a question after about 20 minutes, you are advised to leave it and to go on to another. Return to any unfinished question if you have any time left at the end of the paper.

[Question 1 begins overleaf]

1. Read the passage below and answer the questions which follow it.

Architecture can be considered to be a method for controlling the way in which people within a society move through space. This control is not to be exercised at random, but responds to social needs, and to this extent is consistent and logical within any given society.

Walls serve to create socially meaningful spaces, and at the same time act as barriers to deny access to them. Portals or doorways, on the other hand, are controllable breaches within barriers that can deny or facilitate access to social spaces. Analysis of buildings in terms of access and denial, of barriers and breaches, has the potential to provide information on how societies order their built environment to achieve their social aims.

The following diagrams suggest a model for such an analysis. On the left is a series of spatial systems (i.e. buildings), shown in plan, each composed of one or more spatial units (i.e. rooms). Each spatial unit is defined by walls (solid lines) and doorways (gaps between the lines). On the right is shown a series of so-called "gamma-maps", which represent movement into and through the units of the spatial system on the left. The area outside each spatial system is considered as a single space on the gamma-map.

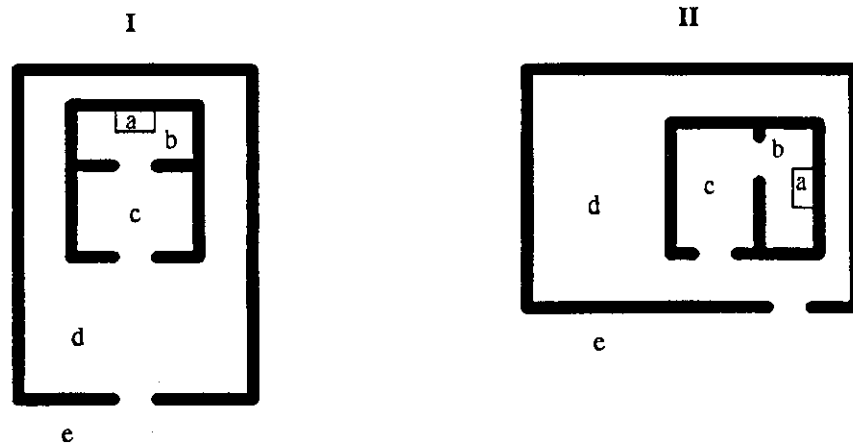| SPATIAL SYSTEMS	GAMMA MAPS
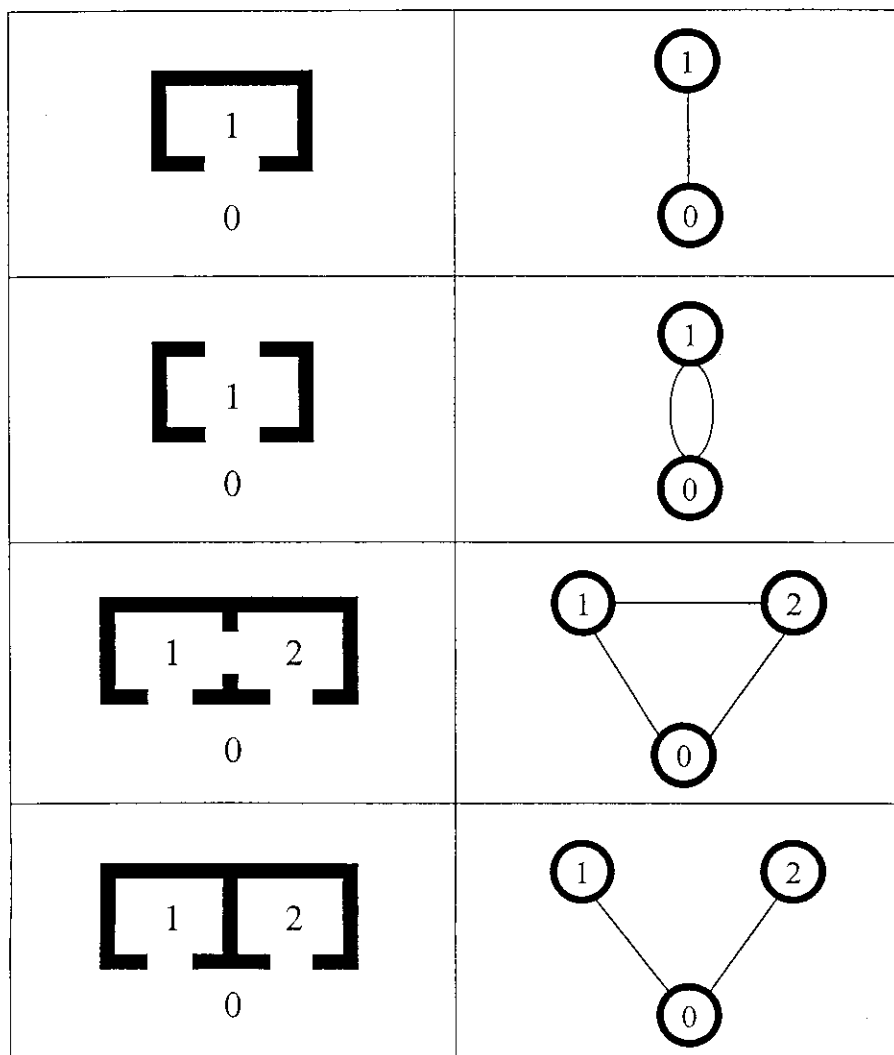
a) Draw a plan for a building which satisfies the gamma-map shown below. Label the rooms with the appropriate numbers.
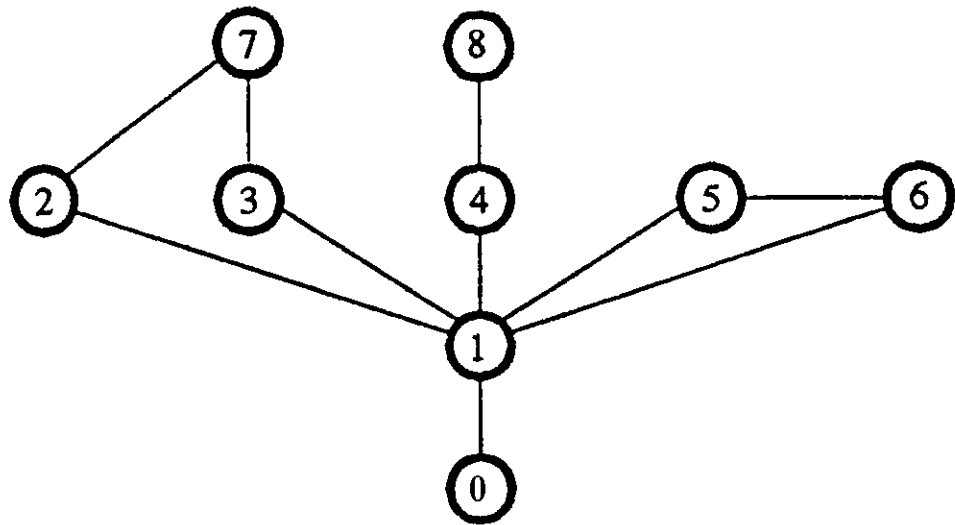
[4]

b) Now study diagrams 1 and 2 below, which are plans of two religious buildings uncovered by archaeologists working in two different parts of the world.

I   II

KEY

a: cult image   d: court
b: 'holy-of-holies'   e: exterior
c: vestibule

   i)   Draw a labelled gamma-map for each building (do not show the cult image as it is not a room).
   ii) Describe two features of a building which cannot be deduced from a study of its gamma-map.

iii) Given only the floor plans of these two buildings, and the information that both buildings have a religious function, what similarities and differences might you deduce about the nature of the religious practices of the people who constructed each building? Explain your reasoning.

[8]

c) i)   Draw gamma maps for each of the buildings shown in plan form below.

I

III

II

IV
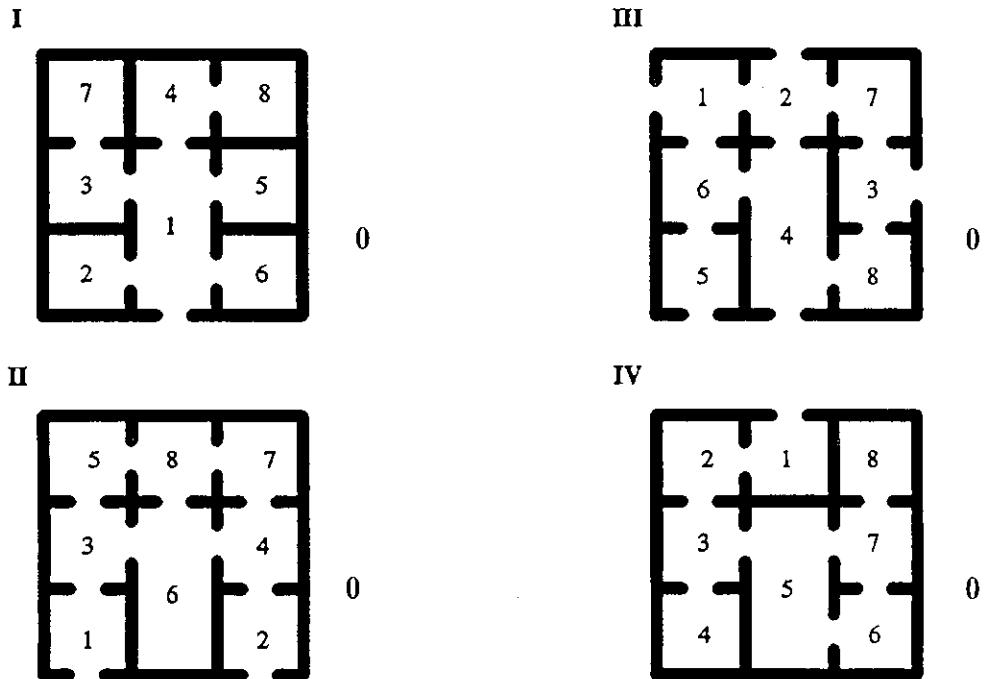
One of the plans represents a royal palace, where only the most powerful have access to the monarch's bedroom.

ii)   Which plan represents the palace, and which room is the monarch's bedroom?

iii) Identify one other room in the same building and suggest, with reasons, what its function may be.

[13]

2. *Doctors are often faced with difficult decisions as to how to allocate limited resources most effectively. There is not the money available to treat every patient and so doctors and health service managers need to decide which of their patients might gain the most from treatment.*

*A **quality-adjusted life-year (QALY)** embraces both the time a patient is expected to live after his treatment (life expectancy) and the quality of life the patient will have. The quality of life is scored on a scale from 0 to 1 where 0 is equivalent to being dead and 1 represents a state of perfect health.*

QALY = life expectancy × quality of life score

For example an operation that allows the patient an extra year of life in perfect health scores 1 QALY.

a) Two types of surgical operation can be carried out to treat a patient with a diseased liver. Treatment A will give the patient 8 extra years of life with a quality of life score of 0.75 whereas Treatment B will generate 10 years of life in with a quality of life score of 0.5.

What is the difference in the number of QALYs generated by the two treatments? Show your working.

[3]

b) Treatment A costs £120,000 to carry out whereas treatment B costs just £70,000. Which treatment is the most cost-effective? Justify your answer.

[4]

c) The table below shows the cost per QALY of various medical procedures.

medical procedure	£/QALY
GP advice to stop smoking	260
Hip replacement	1,500
Surgery to replace heart valves	1,835
Kidney transplantation	5,230
Breast cancer screening	6,760
Renal dialysis	8,450
Surgery to remove cancers in the brain	114,400

i) Why do you think the cost/QALY for anti-smoking advice is so low?

[4]

ii) Surgery to replace diseased hips has a much lower cost/QALY than surgery to remove cancers in the brain. What do you think are the reasons for this?

[4]

d) Kidney transplantation is another area where rationing has to occur within the healthcare system. This is because there are many more patients waiting for a kidney transplant than there are donor kidneys available.

You are working as a doctor and are confronted with the three patients described below, all of whom need a kidney transplant to survive.

Mrs X is 42 years old and a mother of three primary school children. She is divorced from their father and has stopped her work as a teacher to raise her family. She is a non-smoker and is otherwise in good health.

Mr Y is 35 years old. He works as a professor in the local university leading a team of scientists who are researching drugs that might treat lung cancer. He is very busy with his work and has become overweight in the past few years. Mr Y has no children and smokes about 20 cigarettes a day.

Mr Z is a 16-year-old boy. He has not been successful at school and has been in trouble with the police for various minor crimes. It seems that he is unlikely to pass many of his GCSE exams at the end of the school year and has no real plans for the future.

A donor kidney becomes available and you have to decide which of the three patients you will treat. Which person would you give the kidney to? Describe the arguments you would use to justify your decision.

[10]

3. Read this passage and then answer the questions which follow:

The correct way for man to understand Beauty is to begin when he is young by being drawn towards a beautiful body. Next he should realize that the beauty of any one person is closely related to that of another and therefore he should be drawn to all beautiful bodies. After this, he should regard the beauty of minds as more valuable than that of the body. As a result, he will be forced to observe the beauty in practices and laws and to see that every type of beauty is closely related to every other, so that he will regard beauty of body as something petty. After practices, he should proceed to forms of knowledge, so that he sees their beauty too. Looking now at beauty in general he will no longer be slavishly attached to the beauty of a particular person or specific practice. Instead of this low and small-minded slavery, he will be turned towards the great sea of Beauty. In other words, beginning with a single beautiful body, man should always try to go up with the aim of reaching Beauty. Like someone using a staircase, he should go from one to two and from two to all beautiful bodies, and from beautiful bodies to beautiful practices, and from practices to beautiful forms of learning. Finally he will reach the top of the ladder and will find himself in the presence of Beauty itself.

(240 words)

From Plato's *Symposium*

a) In this passage Plato uses the analogy of a staircase or ladder to discuss the different kinds of beauty. Explain this analogy using your own words. Do you agree with Plato that physical beauty is inferior to other forms of beauty?

[10]

b) Considering your own experience, give two examples of beauty: one perceived through the senses, one which involves the mind. Explain as fully as possible why you find them beautiful.

[10]

c) Define in one sentence what you understand by the word 'beauty'.

[5]

4. The following passage of about 400 words was written in 1919. Read it carefully then answer the questions which follow.

Europe was so organised socially and economically as to secure the maximum accumulation of capital. While there was some continuous improvement in the daily conditions of life of the mass of the population, society was so framed as to throw a great part of the increased income into the control of the class least likely to consume it. The new rich of the nineteenth century were not brought up to large expenditures, and preferred the power which investment gave them to the pleasures of immediate consumption. In fact, it was precisely the inequality of the distribution of wealth which made possible those vast accumulations of fixed wealth and of capital improvements which distinguished that age from all others. Herein lay, in fact, the main justification of the capitalist system. If the rich had spent their new wealth on their own enjoyments, the world would long ago have found such a régime intolerable. But like bees they saved and accumulated, not less to the advantage of the whole community because they themselves held narrower ends in prospect.

The immense accumulations of fixed capital which, to the great benefit of mankind, were built up during the half century before the war, could never have come about in a society where wealth was divided equitably. The railways of the world, which that age built as a monument to posterity, were, not less than the pyramids of Egypt, the work of labour which was not free to consume in immediate enjoyment the full equivalent of its efforts.

Thus this remarkable system depended for its growth on a double bluff or deception. On the one hand the labouring classes accepted from ignorance or powerlessness, or were compelled, persuaded, or cajoled by custom, convention, authority, and the well-established order of society into accepting a situation in which they could call their own very little of the cake that they and nature and the capitalists were co-operating to produce. And on the other hand the capitalist classes were allowed to call the best part of the cake theirs and were theoretically free to consume it, on the tacit underlying condition that they consumed very little of it in practice. The duty of 'saving' became nine-tenths of virtue and the growth of the cake the object of true religion. There grew round the non-consumption of the cake all those instincts of puritanism, which in other ages has withdrawn itself from the world and has neglected the arts of production as well as those of enjoyment.

a) Summarize the passage in about seventy-five words.

[15]

b) Most people acknowledge that today we live in a society of 'consumers' rather than 'savers'. Discuss whether this is a good or a bad thing for the individual and/or for society as a whole.

[10]

[End of paper]

Eton College King's Scholarship Examination 2005

MATHEMATICS A   **(One and a half hours)**

Answer Question 1 and as many of the other five questions as you can.
Question 1 is worth 50 marks. All other questions are worth 10 marks each.

Show all of your working.

1.   **Compulsory Question**

     (a)   (i)   Evaluate $\dfrac{6+\sqrt{16}}{\sqrt{6+\frac{1}{4}}}$ [2]

               (ii)   If $a = 0.36$, $b = -3$ and $c = 11$ find the *exact* value of $\dfrac{c^2-b+56}{3+\sqrt{a}}$ [2]

     (b)   Simplify the following expressions fully:
               (i) $2a^2(1-a)-3a(a^2+1)$ [3]

               (ii) $\dfrac{3b+5b}{4b^3}$ [2]

     (c)   Factorise fully $15d^3 - 3de$ [2]

     (d)   Solve the following:
               (i) $\frac{1}{2}(2x-1)-\frac{1}{3}(1-x)=\frac{1}{4}$ [3]

               (ii) $\dfrac{8-3x}{2}\geq 1$ [2]

     (e)   Solve the following pair of simultaneous equations:

               $3x+2y=-5$
               $5x-3y=17$ [4]

     (f)   (i)   David shares out 27 sweets in the ratio 6 : 2 : 1 between himself and his two friends. If he takes the largest share, how many sweets does he get?
                                                        [2]

               (ii)   If it takes 5 boys 24 hours to paint a wall, how long would it take 4 boys to paint the same wall?
                                                      [2]

(g)   A company's profit in the year 2000 was £126,000.

    (i)   In the year 2001 the profits were £192,000. Calculate the percentage increase (giving your answer to the nearest whole number).   [2]

    (ii)   In the year 2002 the profits fell by 46% compared to the previous year. Calculate the overall percentage change in profits from the year 2000 to 2002 stating whether it was an increase or decrease and giving your answer to the nearest whole number.   [3]

(h)   A cake with a mass of 550 grams has 3 ingredients: flour, sugar and butter. Twice as much flour is used as sugar, and one and a half times as much sugar is used as butter. Calculate the mass of flour used.   [4]

(i)   Calculate the value of x in the diagram below *which is NOT drawn to scale.* (Give your answer correct to 2 d.p.)
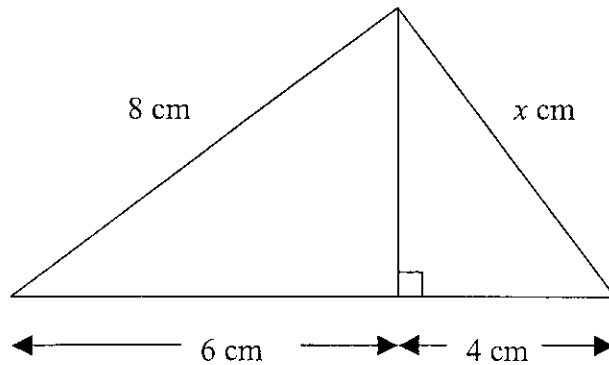
[4]

(j)   In the diagram below, *which is NOT drawn to scale,* the circle has an area of 100 cm^2.
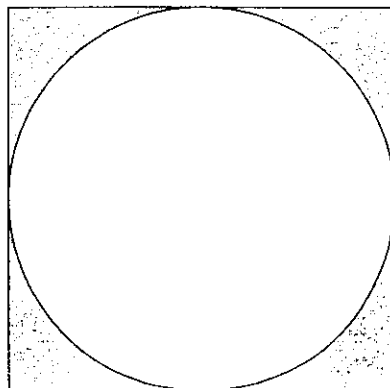
    (i)   Show that the radius of the circle is 5.64cm (to 2 d.p.).   [3]

    (ii)   Using this value, calculate the shaded area (to 2 d.p.).   [3]

(k)   A cyclist travels 40 km from home to work at a constant speed of x km/h .

    (i)   How long does it take (in terms of x) for him to get to work?   [1]

He travels home 2 km/h slower than on the outward journey.

    (ii)   If he took 1 hour longer to get home than to get to work,
explain why $\dfrac{40}{x-2} - \dfrac{40}{x} = 1$.   [2]

    (iii)   This equation can be rearranged to give $x^2 - 2x = 80$ (*you do not have to do this*).
In order to solve this equation the following table has been constructed.

x	x^2	$x^2 - 2x$
1	1	-1
2	4	0
3	9	3
4	...	...
5	...	...
6		
...		

Complete the entries for $x = 4, 5, 6$ and continue the table in order to solve the equation.   [4]

2.   Car parking costs £1.50. An automated car park machine takes either a 50 pence piece and a pound coin, or three 50 pence pieces.
Some coins are rejected by the machine as faulty, and the gate will only open if all the necessary coins are accepted.
The probability of a 50 pence piece or a pound coin being rejected is 0.1 and 0.2 respectively. Each coin inserted is assumed to be independent of any previous one.

    (a)   State the probability of a pound coin being accepted.   [1]

    (b)   Alan inserts three 50 pence pieces.
        (i)   Calculate the probability of all three coins being accepted.   [2]

        (ii)   What is the probability of one or more of the coins being accepted?   [2]

(c) Brian has a pound coin and three 50 pence pieces in his pocket. He inserts the pound coin first.

One possible outcome could be written as ARA. This describes the possibility that the pound is accepted, the first 50 pence rejected and the next 50 pence accepted (A for accepted, R for rejected). In this case, the gate would open.

(i) Using this notation write down *all* possible outcomes for Brian attempting to pay for parking. [2]

(ii) Calculate the probability that the gate opens for Brian (to 2 d.p.). [3]

3. (a) We shall use the symbol $+_4$ to stand for the operation called *addition modulo 4* which is defined by adding and then selecting the remainder upon division by 4.

For example, 2 combined with 3 is written as $2 +_4 3$ and equals 1 since $2 + 3 = 5$ which leaves a remainder of 1 when divided by 4.

(i) Calculate $3 +_4 11$ [1]

(ii) Calculate $12 +_4 4$ [1]

(iii) **Copy and complete** the operation table below for $a +_4 b$ for the numbers 0,1,2,3. You will see that $2 +_4 3 = 1$ has been filled in for you in bold.

b values

		0	1	2	3
	0	?	?	?	?
a values	1	?	?	?	?
	2	?	?	?	**1**
	3	?	?	?	?

[3]

(iv) What can you conclude about the relationship between $a +_4 b$ and $b +_4 a$ for all results of this operation? [1]

(v) We define the *identity* to be a number that does not change any number it is combined with using the operation. Explain why 0 is the *identity*. [1]

(vi) The *inverse* of any number is defined as the number that combines with it to produce the identity. What is the inverse of 1? [1]

(b) Another operation $\otimes$ is defined by $a \otimes b = ab + b - 1$

Charles convinces himself that $a \otimes b = b \otimes a$. Comment on his deduction. [2]

4. (a) Expand $(x + y)^2$ [2]

    (b) Consider the diagram shown below. The shape in bold outline is formed by tracing around certain *halves* of the circles shown.
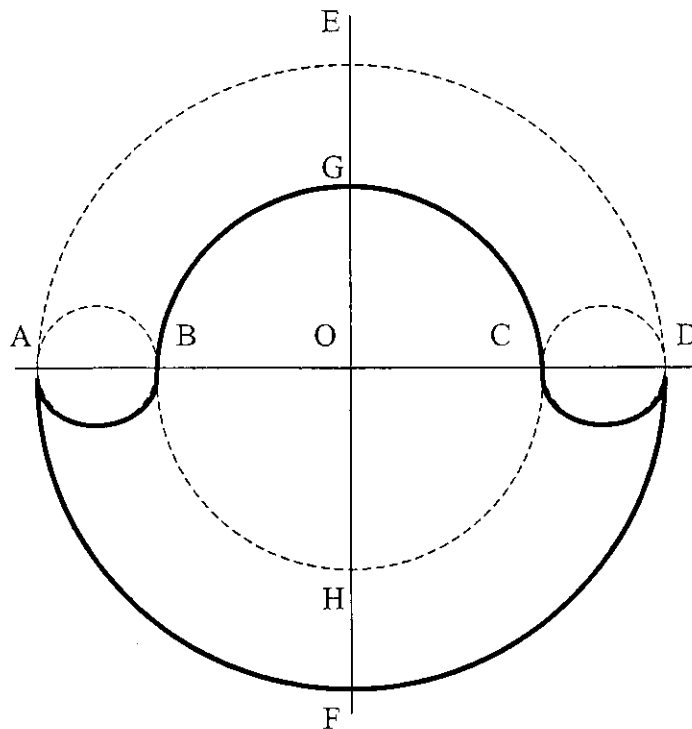
Circles with diameters AB and CD are identical. EF is the line of symmetry of the shape.
Let the radius of the two smaller circles be x cm and the radius of the circle with diameter BC be y cm.

(i) What is the radius of the circle AEDF in terms of x and y? [1]
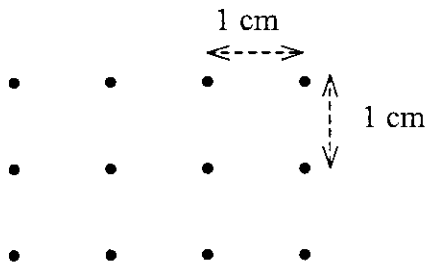
(ii) Show that the area of the shape drawn in bold is equal to $\pi(x + y)^2$ [4]

A circle is drawn with diameter FG.

(iii) What would be its radius in terms of x and y? [2]

(iv) Hence show that this circle would have the same area as the shape drawn in bold above. [1]

5. Consider the grid of dots drawn below drawn on 1cm squared paper.

1 cm

1 cm

This grid is described as a 3 x 4 grid. The first number stands for the number of dots in each column and the second for the number in each row.

I can join up the dots using either horizontal or vertical lines. These lines can be of any length inside the grid. So I could draw 1cm, 2cm or even 3cm lines on this grid. Obviously I could only draw 3 different lines of length 3cm.

(a) How many *horizontal* lines of length 1cm can be drawn *in total* on this grid?

[1]

(b) Show that there are a total of 10 lines of length 2cm by drawing a sketch.

[2]

(c) Calculate the *total* number of lines of any length in this 3 x 4 grid by **copying and completing** the table below:

Length of lines (cm)	Number of lines on grid
1	
2	
3	
4	
TOTAL =	

[2]

(d) If I now have n dots in my top row.
   (i) How many lines of length 1cm can be drawn in this row?   [1]
   (ii) How many lines of length 2cm can be drawn in this row?   [1]

(e) I now have an $m \times n$ grid (where n is bigger than 3).
   Calculate the number of *horizontal* lines of length 3cm that can be drawn in this grid.   [3]

[Page 6 of 7]

6.   A drawing of a piece of card is given below (*it is NOT drawn to scale*).
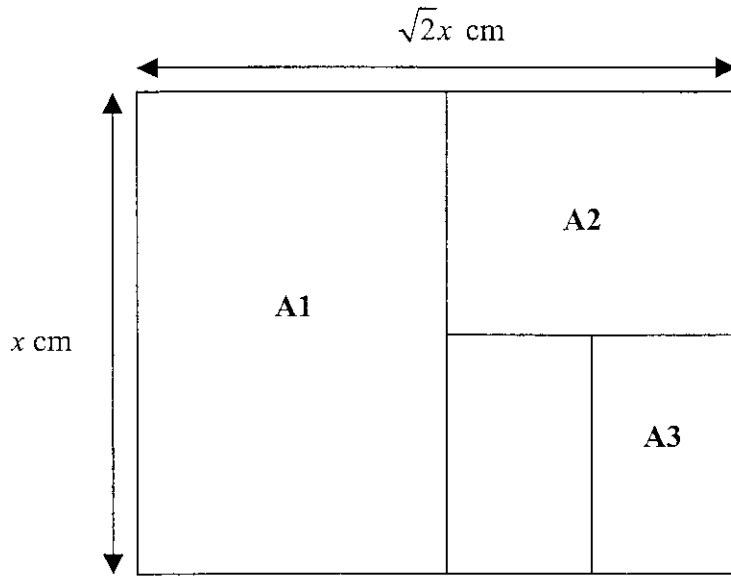
$$\sqrt{2}x \text{ cm}$$

This piece of card is called **A0**. It has an area of 1 m² and its width is $\sqrt{2}$ times its height. We let the height be x cm and so the width will be $\sqrt{2}x$ cm as shown in the diagram. **A1** card is obtained by cutting the width (the longer side) of the **A0** card in half. **A2** card is then obtained as shown in the diagram by cutting the width of **A1** card in half and so on.

(a)   Calculate in cm² the area of **A3** card.   [2]

(b)   Prove that **A1** card is *similar* to **A0** card.   [3]

(c)   Show by calculation that the *height* of **A0** card is approximately 84cm.   [2]

(d)   If it is given that the *height* of **A***n* card is approximately 21cm, find *n*.   [3]

Eton College King's Scholarship Examination, 2005

ENGLISH   **(One and a half hours)**

You are advised to spend twenty-five minutes on Part I, thirty-five minutes on Part II and thirty minutes on Part III. Attempt all parts and questions.

Part I [20 marks]

To paraphrase is defined in the dictionary as 'to express meaning...in other words'.

1.   Paraphrase the following proverbs:

a)   Birds of a feather flock together.

[2]

b)   Nothing succeeds like success.

[2]

c)   A rolling stone gathers no moss.

[2]

d)   Necessity is the mother of invention.

[2]

e)   A stitch in time saves nine.   [2]

2.   Paraphrase the following passage of verse. Write your answer in clear, modern English **prose**.

        And these few precepts in thy memory
        Look thou character. Give thy thoughts no tongue,
        Nor any unproportion'd thought his act.
        Be thou familiar, but by no means vulgar;
        The friends thou hast, and their adoption tried,
        Grapple them to thy soul with hoops of steel;
        But do not dull thy palm with entertainment
        Of each new-hatch'd, unfledg'd comrade. Beware
        Of entrance to a quarrel; but, being in,
        Bear't that th' opposer may beware of thee.
        Give every man thine ear, but few thy voice;
        Take each man's censure, but reserve thy judgment.
        Costly thy habit as thy purse can buy,
        But not express'd in fancy; rich, not gaudy:
        For the apparel oft proclaims the man...
                                        Shakespeare, *Hamlet.*
                                                        [10]

Part II [40 Marks]

Read the following passage and answer the questions that follow:

Wear Sunscreen.

If I could offer you only one tip for the future, sunscreen would be it. The long-term benefits of sunscreen have been proved by scientists, whereas the rest of my advice has no basis more reliable than my own meandering experience. I will dispense this advice now.

Don't worry about the future. Or worry, but know that worrying is as effective as trying to solve an algebra equation by chewing bubble gum. The real troubles in your life are apt to be things that never crossed your worried mind.

Sing.

Don't be reckless with other people's hearts: don't put up with people who are reckless with yours.

Floss.

Don't waste your time on jealousy. Sometimes you're ahead, sometimes you're behind. The race is long and, in the end, it's only with yourself.

Remember compliments you receive. Forget the insults. If you succeed in doing this, tell me how.

Keep your old love letters. Throw away your old bank statements.

Stretch.

Don't feel guilty if you don't know what you want to do with your life. The most interesting people I know didn't know at 22 what they wanted to do with their lives. Some of the most interesting 40-year-olds I know still don't.

Maybe you'll marry, maybe you won't. Maybe you'll have children, maybe you won't. Maybe you'll divorce at 40, maybe you'll dance the funky chicken on your 75th wedding anniversary. Whatever you do, don't congratulate yourself too much, or berate yourself either. Your choices are half chance. So are everyone else's.

Dance, even if you have nowhere to do it but your living room.

Read the directions, even if you don't follow them.

Get to know your parents. You never know when they'll be gone for good.

Be nice to your siblings. They're your best link to your past and the people most likely to stick with you in the future.

Travel.

Accept certain inalienable truths: prices will rise. Politicians will philander. You, too, will get old. And when you do, you'll fantasize that when you were young, prices were reasonable, politicians were noble, and children respected their elders.

Respect your elders.

Be careful whose advice you buy, but be patient with those who supply it. Advice is a form of nostalgia. Dispensing it is a way of fishing the past from the dustbin, wiping it off, painting over the ugly parts and recycling it for more than it's worth.

But trust me on the sunscreen.

<div align="center">from Wear Sunscreen, Mary Schmic, Chicago Tribune</div>

3. Consider each of the following phrases in the context in which it appears and write an explanation of what you think it means.

    a)   '...my own meandering experience.'

    b)   'The race is long and, in the end, it's only with yourself.'

    c)   'Read the directions, even if you don't follow them.'

    d)   'Accept certain inalienable truths.'

    e)   'Advice is a form of nostalgia.'

    [10]

4. What objectives do you think that Mary Schmic sets out to achieve? Give clear reasons for your comments.

    [10]

5. Look at the advice of Mary Schmic, **and the advice given in the passage from Hamlet in Section I**. What do the passages reveal about the kinds of audience for which the writers are writing?

    [10]

6. By referring to examples taken from the material provided in Part I and Part II, evaluate the strengths and weaknesses in the way that advice is presented. You may wish to consider both content and presentation in your response.

    [10]

Part III [40 marks]

7.   **Either**

Write a letter from a mother to a daughter, giving advice on the eve of her wedding day.

Or

Compose a short article for a young person's magazine, giving advice on how to make a success of life at school.

Or

'Stupid people always think they are right. Wise people listen to advice.' Write a speech beginning with this statement making clear the audience to whom your sentiments are addressed.

Eton College King's Scholarship Examination 2005

LATIN (One and a half hours)

Answer Question 1 and ONE other question.

1. *The Roman general Labienus had been fighting for some months against the stubborn Gallic chief Indutiomarus. He then came up with a cunning plan that he hoped would lure the Gauls into a false sense of security.*

itaque hoc consilium Romanorum Indutiomarum audaciorem mox fecit. Labienus enim omnes copias intra castra collegerat ut hostes se perterritum esse putarent; volebat Indutiomarum tamen suos in maximum periculum ponere, cum neminem oppugnare conari vidisset. ille vero cotidie cum equitibus, qui tela multasque contumelias ad
5   Romanos iaciebant, castris propius appropinquabat. hoc quattuor dies fecerunt. quarto die, nullo responso a nostris accepto, Galli discedere iam constituerant, ubi subito Labienus ex duabus portis ingenti clamore totum exercitum emisit. Labienus, postquam milites spe praemii hortatus est, eis imperaverat ne quemquam ante ducem hostium occiderent. hostes igitur oppugnati dum ad suas urbes lente regrediuntur,
10 statim fugiebant. cum Romani omnes unum virum peterent, ceteri Galli effugerunt, sed Indutiomarus ipse prope flumen celeriter captus interfectus est; caput eius ad Labienum laetum relatum est. equites redeuntes quam plurimos Gallos necaverunt.

consilium,-i (n)	plan	*contumelia,-ae (f)*	insult
intra + acc.	inside	*propius*	nearer
castra,-orum (n,pl)	camp	*nullus,-a,-um*	no
puto,-are,-avi,-atum	I think	*responsum,-i (n)*	reaction
sui,-orum (m,pl)	his men	*Galli,-orum (m,pl)*	Gauls
vero	indeed	*porta,-ae (f)*	gate
	(literally 'truly')	*quemquam*	anyone (acc.)
cotidie	every day	*re- (prefix)*	back
equites,-um (m,pl)	cavalry	*quam + superlative*	as...as possible

(a) Translate the whole passage into English, writing your translation **on alternate lines**. [40]

(b) *audaciorem* (line 1): change this into the superlative, keeping the same case, number and gender. [1]

(c) *omnes copias* (line 2): change this into the dative plural. [2]

(d) *putarent* (line 2): why is this verb in the subjunctive? [1]

(e) *conari* (line 4): what part of the verb is this, and why? [2]

(f) *vidisset* (line 4): in what tense of the subjunctive is this verb? [1]

(g) *iaciebant* (line 5): change this into the perfect active. [1]

(h) *dies* (line 5): in what case is this, and why? [2]

(i) *nullo responso...accepto* (line 6): what construction is this? [1]

(j) *eis* (line 8): in what case is this, and why? [2]

Question 1 (continued)

(k)   *occiderent* (line 9): in which tense of the subjunctive is this verb, and why does it
       need to be in the subjunctive?   [2]
(l)   *relatum est* (line 12): give the first person present indicative active of this verb,
       including the prefix.   [1]
(m)   Find and write down an adverb from anywhere in the passage.   [1]
(n)   Find and write down a present participle from anywhere in the passage.   [1]
(o)   Write down a verb in the present indicative from the passage (*est* is not a valid
       answer if it is part of a perfect passive).   [1]
(p)   Write down a comparative adjective whose positive and superlative forms are to
       be found in the passage.   [1]

                                                                                              [20]

                                                                [Total for Question 1: 60]

ANSWER **EITHER** QUESTION 2 **OR** QUESTION 3

2.   *Read the following passage, then answer the questions below. DO NOT TRANSLATE*
      unless you are specifically asked to do so. You should pay careful attention to the
      number of marks for each question, and supply all the available detail.

      Clodius and Milo, sworn enemies and leaders of rival gangs in an increasingly lawless
      Rome, were both running for high positions in the Senate, when an event took place that
      would change everything.

Clodius multos annos inter Romanos notissimus fuerat, non solum quod homo nobilis erat, qui
bene loqui poterat, sed etiam propter plurima mala et saeva contra deos hominesque facta. cum
sciret (neque enim difficile erat cognoscere) Milonem eo die Lanuvium iter facere velle, ipse
tertia hora Roma egressus est, ut ad suam villam (ut dicebat) adiret. illa tamen causa itineris
5   non vera erat.   Milo autem, postquam senatui adfuit, domum iit, vestimenta mutavit,
exspectabat dum uxor se parabat, deinde decima hora profectus est. ei obviam fit Clodius, in
equo, sine raeda aut solitis comitibus. statim multi viri, quos Clodius in silvis celaverat, gladiis
sublatis ad Milonem cucurrerunt. sine mora, deiecta paenula, de raeda desiluit seque fortiter
defendebat. interea alii servorum eius circum eum stantes dignis vulneribus mortui sunt; alii,
10 quod credebant dominum periisse, quamquam nihil iussi erant, id fecerunt quod omnis civis
Romanus suos servos in simili re facere voluisset.

Clodius,-ii	Clodius	*raeda,-ae (f)*	carriage
facta,-orum (n,pl)	deeds	*solitus,-a,-um*	usual
scio,-ire	I know	*silva,-ae (f)*	wood
cognosco,-ere	I find out	*celo,-are,-avi,-atum*	I hide
Milo,-onis	Milo	*tollo,-ere, sustuli, sublatum*	I raise
ut + indicative	as *(here)*	*paenula,-ae (f)*	overcoat
causa,-ae (f)	reason	*desilio,-ire,-silui,-sultum*	I jump down
senatus,-us (m)	senate	*alii...alii*	some...others
muto,-are,-avi,-atum	I change	*dignus,-a,-um*	worthy
obviam fio + dat.	I meet	*voluisset*	would have wished

[Page 2 of 3]

(a) What do we learn about Clodius' reputation in Rome in line 1 (up to *fuerat*)? [2]
(b) Which two positive qualities did he possess? (lines 1-2) [2]
(c) For what reasons did he also have a bad reputation? (line 2) [3]
(d) What did Clodius do when he heard about Milo's proposed journey to Lanuvium that day? (lines 2-4) [2]
(e) Write out and translate the words that suggest that Milo did not try to hide his movements from anyone. [2]
(f) What reason did Clodius offer for his own journey? (line 4) [1]
(g) Which two Latin words tell us that this was not his real motive? (lines 4-5, *illa... erat*) [1]
(h) List Milo's actions that day (lines 5-6). You should mention **five** distinct things. [5]
(i) Give another Latin word that has the same meaning as *deinde* (line 6). [1]
(j) How might Clodius' appearance have surprised Milo when they met? (lines 6-7) [2]
(k) Translate *statim multi...ad Milonem cucurrerunt* (lines 7-8) into good English. [3]
(l) Write down and translate the words in lines 8-9 (*sine...defendebat*) which show how energetically Milo defended himself. [2]
(m) What happened to the group of slaves mentioned in line 9? Give all the detail. [2]
(n) How might the word order of *circum eum stantes* (line 9) illustrate what they were attempting to do at the time? [1]
(o) What is the writer's view of the second group of slaves (*alii, quod...facere voluisset*, end of line 9-11)? Support your comments from the passage. What do you understand them to have done, from what this last sentence implies? [4]
(p) Milo was on trial for Clodius' murder when this was written. Do you think the writer of this passage thought he was guilty? Support your answer from the text. [3]
(q) Find and write down an example from the passage of a perfect infinitive. [1]
(r) Find and write down an example of an ablative absolute from the passage. [1]
(s) Write down and translate an example from the passage of a "time when" clause. [2]

[Total for Question 2: 40]

3. *Translate this passage into Latin. You should write your translation on alternate lines.*

"Atalanta was a beautiful girl, whom all the boys loved." Marcus laughed because he did not want to hear stories about women who could run fast. "Tell me stories about brave men, battles and death!" And so his mother started to speak again: "Once, when Troy had been defeated by the Greeks, Aeneas collected a crowd of a thousand Trojans near the city. After they had all made a journey for many days, Aeneas ordered the strongest men to build ten huge ships. Since he himself was the son of the goddess Venus, both old men and young men believed that he was able to lead the Trojans to a new land so that they could build bigger walls and punish the Greeks. However, when a savage storm had almost killed many of his companions, Aeneas, driven by the wind to a small island, thought that his mother had now abandoned them."

Atalanta	*Atalanta,-ae (f)*	(she) started	*coepit*	Trojan	*Troianus,-i (m)*
Marcus	*Marcus,-i (m)*	Troy	*Troia,-ae (f)*	Venus	*Venus,-eris (f)*
story	*fabula,-ae (f)*	Aeneas	*Aeneas,-ae (m)*		

[Total for Question 3: 40]

Eton College King's Scholarship Examination 2005

FRENCH   (One and a half hours)

WRITE YOUR CANDIDATE NUMBER HERE: **CAND**

This paper consists of five questions. You must answer ALL the questions, and complete the first four in an hour. The time taken to read the passage for Question 5 is in addition to the one and a half hours given for the paper. Your answers to Questions 1 and 4 should be written ON THE QUESTION PAPER in the spaces provided. Your answers to Questions 2, 3 and 5 should be written on examination stationery.

1.   *USE OF FRENCH (10 marks). You are advised to spend no more than ten minutes on this question.* **Write your answers in the spaces provided.**

a)   *Translate the following verb forms into French, using the verb that is given in brackets:*

(*venir*) They come :

(*jeter*) I throw :

(*se laver*) Get washed! (*2ⁿᵈ person singular*) :

(*envoyer*) We will send :

(*recevoir*) They will receive :

(*pouvoir*) He would be able :

(*être*) I was :

(*conduire*) You were driving (*2ⁿᵈ person plural*) :

(*pleuvoir*) It has rained :

(*naître*) She was born :

b)   *Fill each of the following ten gaps with a single French word, as in the examples set out below:*

Examples: *Où est (le) parapluie? Est-ce que je l'(ai) perdu?*
                     Elle (en) a pris deux dans (son) sac à main.

Il (   ) consulté l'annuaire (   ) de me téléphoner.

A (   ) s'était-il assis que la porte (   ) ouverte.

Elle m'a aidé (   ) trouver le papier et (   ) écrire la lettre.

(   ) en écoutant la radio il a lu le journal qui (   ) d'arriver.

Que penses-tu (   ) livres (   ) j'ai fait référence ?

c)   *Look at the examples set out below:*

Quand je serai plus vieux,   *. . . . . je serai professeur.*
              (or)   *. . . . . j'achèterai une Renault.*

Où sont les disques   *. . . . . que j'ai mis sur la table?*
              (or)   *. . . . . que j'ai achetés hier?*

Now use your imagination to complete the following sentences in French:

Quand il arrivera..

Si j'ai assez d'argent...

Il a demandé..

Après s'être...

Aussitôt qu'il...

2. *READING COMPREHENSION (25 marks)* :

To be written on examination stationery.

Read the following passage carefully and then answer questions (a) – (p) **IN ENGLISH.** *Your answers must be based on the information contained in the text.*

VISITORS TO MUSEUMS IN THE DÉPARTEMENT OF ISÈRE

Un record de visites gratuites des musées en Isère puisque la fréquentation des musées départementaux isérois est dopée par la gratuité.

Les huit musées départementaux de l'Isère ont vu le nombre de leurs visiteurs augmenter de 69% en 2004 avec l'instauration par *le conseil général (l)* de la gratuité pour tous.

L'initiative est unique en France pour *les musées départementaux (m)*. Le but est atteint, le public ne boude pas, et revient.

« En supprimant le ticket d'entrée, nous avons fait tomber une barrière psychologique. L'enjeu est de pouvoir *accueillir un public (n)* nouveau non initié, et surtout de lui donner envie de revenir quand il le souhaite, » a expliqué André Vallini, président du conseil général de l'Isère.

Au musée de la Révolution française de Vizille, *le taux de fréquentation (o)* a doublé en 2004, atteignant 72.647 visiteurs. Au musée médiéval de Saint-Antoine l'abbaye, la fréquentation a fait un bond de 87%, atteignant 22.154 visiteurs sur l'année.

D'autres phénomènes ont concouru à amplifier l'impact de la mesure. Ainsi, la commémoration du 60ème anniversaire de la libération a dopé les entrées au musée de la Résistance et de la Déportation de Grenoble, avec une progression de 200% du nombre de visiteurs en juillet et août. L'Egyptomania a fait grimper la fréquentation du musée dauphinois (patrimoine régional), où l'exposition « Trésor d'Egypte » présentant les statues de la « cachette de Karnak » a attiré 76.000 visiteurs en quatre mois (+158% sur un an). Le musée de l'ancien évêché de Grenoble (histoire et patrimoine local) annonce *une augmentation annuelle (p)* de 44%. Le musée Hébert (peinture XIXème), qui a toujours été gratuit, a réouvert fin 2003 après trois années de travaux. Sa fréquentation est passée de 11.000 visiteurs en 1999 à 19.000 en 2004. Le musée Hector Berlioz de la Côte Saint-André, qui fêtait en 2003 le bicentenaire du compositeur dans des salles entièrement rénovées, fait état pour sa part de 15.837 visiteurs en 2004, contre 2.856 en 2001 avant les travaux.

(a) What has happened to the number of visitors to museums in the department of Isère
    over the year 2004?   [1]
(b) Why has this happened?   [1]
(c) What kind of visitors are now encouraged?   [1]
(d) What would the authorities like these visitors to do?   [1]
(e) What other factors have played a part in the change in numbers of museum visitors,
    and where in particular has this happened?   [4]
(f) What kind of museum is to be found at the bishop's palace in Grenoble?   [2]
(g) What kind of museum is the "musée Hébert"?   [1]
(h) How much has it always cost to get in to the "musée Hébert"?   [1]
(i) What has happened in the "musée Hubert" between 1999 and 2004?   [2]
(j) What happened at the Hector Berlioz museum in 2003?   [2]
(k) Say whether the following statements are true or false:
        i) The number of visitors to French museums is generally in decline.
        ii) In general, people have to pay more to get into museums.
        iii) The French museum authorities have achieved their aim.
        iv) New visitors tend to visit a museum once and don't return.   [4]
(l-p) What do you think the words and phrases in ***bold italics*** mean? You may translate them
      or explain them.   [5]

3. TRANSLATION (25 marks)

To be written on examination stationery.

Translate into English, paying attention to the style as well as the accuracy of your translation.

PROBLEMS IN THE SCHOOL CANTEEN

Le maire de Villefranche (Rhône) veut interdire de cantine les enfants qui ne mangent pas de viande.

« Tous les enfants doivent manger de tous les plats servis, même en petite quantité, » indique la lettre de la mairie aux parents d'élèves inscrits à la cantine.

Plus que les végétariens, ce sont les enfants dont les parents ne souhaitent pas qu'ils mangent de la viande non halal qui sont visés par la mairie.

« La restauration scolaire étant un service proposé aux parents mais en aucun cas une obligation, je vous demande de bien vouloir vous conformer aux règles, faute de quoi je me verrai dans l'obligation de ne plus accepter vos enfants au restaurant scolaire, » conclut le texte.

« C'est une atteinte aux droits de l'enfant et aux droits de l'homme, » a déclaré Ahmed Khenniche, président du syndicat régional, précisant que sa fédération avait été informée de la situation par « un certain nombre de parents d'élèves. »

Le syndicat « demande à la municipalité de revenir sur sa position » et « va examiner, du point de vue judiciaire, les suites à donner à cette affaire, » a ajouté M. Khenniche, appelant la mairie à rencontrer les parents d'élèves concernés.

4.   *TRANSLATION INTO FRENCH (10 marks)*

Write your answer in the space provided.

(Remember that the Reading Comprehension and the Translation provide almost all the words and structures that you will need.)

a) "The tickets are free," the mayor said.

_____

b) The annual number of visitors has been increased by 50%.

_____

c) In order to encourage people to return, museums will be forced to do away with entry tickets.

_____

d) The mayor did not want them to commemorate the bicentenary of the French Revolution.

_____

e) He asked her to be kind enough no longer to eat biscuits in the library.

_____

5. *REPRODUCTION STORY (30 marks)*

To be written on examination stationery.

The story will be read to you twice. You may not take notes during the reading. You should aim to reproduce the story in about 120-130 words of French, and you will be marked for the style as well as the accuracy of your version.

RENEWING AN OLD FRIENDSHIP

l'autobus – Suzanne – une place libre – un pickpocket – l'impression de connaître – lever les yeux – Marianne Leduc – cinq ans – si longtemps – un arrêt – un numéro de téléphone – se revoir – une rencontre – au bout du fil – une soirée – une quinzaine – des disques – danser – invitation inattendue – nouvelle robe – samedi soir – changer – gauche – distingué – remmener – se séparer – prendre rendez-vous – une glace

Eton College King's Scholarship Examination 2005

FRENCH (Supervisor's Copy)

5. *REPRODUCTION STORY. The time taken to read the passage twice is in addition to the one and a half hours given for the paper.*

RENEWING AN OLD FRIENDSHIP

L'autobus était presque complet, mais Suzanne a trouvé au fond une place libre et elle s'y est assise. Elle pensait toujours à l'incident extraordinaire entre un gendarme et un pickpocket auquel elle venait d'assister, quand elle a soudain eu l'impression de connaître la personne assise à côté d'elle. Elle a levé les yeux pour trouver que sa voisine la regardait d'un air étonné et ravi. C'était une ancienne camarade de classe, Marianne Leduc. Les deux jeunes filles ne s'étaient pas vues depuis plus de cinq ans.

« Quelle bonne surprise !» s'est écriée Marianne.

« Que je suis contente de te revoir, » a répondu Suzanne. « Et après si longtemps !»

Elles ont causé de choses et d'autres. Puis Marianne a dit :

« Je descends au prochain arrêt, mais donne-moi ton numéro de téléphone et je t'appellerai. Voici le mien. Il faut qu'on se revoie bientôt, n'est-ce pas ?»

Les deux jeunes filles se sont revues plusieurs fois pendant les semaines qui ont suivi leur rencontre. Puis, un jour, on a demandé Suzanne au téléphone. C'était Marianne au bout du fil.

« Nous donnons une petite soirée samedi prochain, » a-t-elle dit. « Il y aura des amis de mon frère. Tu te rappelles Henri ? Il a deux ans de plus que moi. Nous serons une quinzaine peut-être. Après avoir mangé, on écoutera des disques et on dansera. Tu pourras venir, Suzanne ?»

Suzanne a accepté tout de suite et avec un vif plaisir cette invitation inattendue. Elle ne sortait pas souvent le soir et n'allait presque jamais à une soirée. Pour l'occasion elle a décidé de s'acheter une nouvelle robe.

Quand Suzanne est arrivée chez son amie le samedi soir suivant, Marianne et son frère sont venus tous les deux lui ouvrir la porte.

Suzanne se rappelait bien maintenant le frère de Marianne. Mais comme il avait changé ! Ce garçon long, mince et un peu gauche était devenu un bel homme à l'air distingué.

Pendant la soirée Henri et Suzanne ont souvent dansé ensemble. Plus tard, Henri l'a remmenée chez elle en voiture et avant de se séparer, ils ont pris rendez-vous pour le lundi suivant.

Rentrée dans sa chambre, Suzanne s'est regardée dans la glace, très émue. Il lui semblait qu'en une soirée sa vie avait complètement changé.

[30 marks]

[End of paper]

Eton College King's Scholarship Examination 2005

GREEK   (One and a half hours)

Candidates should attempt ALL the questions on this paper.

1.

(a) Give the appropriate forms of the following articles and nouns:

(i)	ὁ δοῦλος	accusative plural	
(ii)	τὸ δένδρον	dative singular	
(iii)	ἡ οἰκία	genitive singular	
(iv)	ἡ τιμή	nominative plural	
(v)	ὁ νεανίας	dative plural	[5]

(b) Translate into English:

(i)	λύετε	
(ii)	ἔλυες	
(iii)	λύσομεν	
(iv)	ἐλύθησαν	
(v)	εἰσίν	[5]

(c) Translate into Greek:

from λύω:	(i)	they were loosing	
	(ii)	he is loosed	
	(iii)	loosing (masculine nominative plural)	
from φιλέω:	(iv)	you (plural) love	
from εἰμί:	(v)	they were	[5]

[Total for Question 1: 15]

2. Translate the following passage into English: **write your translation on alternate lines.**

Darius meets with disappointment when he opens the tomb of Nitocris, queen of Babylon

ἡ δὲ Νίτωκρις <u>ἀπάτην</u> ταύτην ποιεῖ· τάφον γὰρ <u>ἑαυτῆς</u> παρασκευάζει ἐγγὺς τῶν τῆς πόλεως πυλῶν, καὶ εἰς τὸν τάφον γράφει λόγους λέγοντας τάδε· "εἴ τις τῶν ἐν τῇ Βαβύλωνι βασιλέων, <u>ὕστερον</u> ἐμοῦ γιγνόμενος, <u>πένης</u> ἐστὶ καὶ οὐδένα χρήματα ἔχει, δεῖ αὐτὸν <u>ἀνοίγειν</u> τὸν τάφον καὶ λαμβάνειν <u>ὁπόσα</u> χρήματα ἐθέλει. ἀλλὰ <u>μὴ ἄνοιγε</u> τὸν τάφον, <u>μὴ πένης ὤν</u>." οὐδεὶς οὖν τῶν βασιλέων τὸν τάφον <u>ἀνοίγει</u>, <u>μέχρι οὗ</u> ὁ Δαρεῖος γίγνεται βασιλεύς· δοκεῖ δὲ τῷ Δαρείῳ λαμβάνειν τὰ χρήματα. ἀνοίγει δὲ τὸν τάφον καὶ εὑρίσκει χρήματα μὲν οὔ, τὸν δὲ τῆς Νιτώκρεως νεκρὸν καὶ λόγους λέγοντας τάδε· "μόνον οἱ <u>αἰσχροκερδεῖς</u> ἄνθρωποι <u>ἀνοίγουσι</u> τοὺς τῶν νεκρῶν τάφους." οὕτως δὲ ἡ Νίτωκρις τὸν Δαρεῖον ἐξαπατᾷ.

HERODOTUS (adapted)

ἡ ἀπάτη, -ης	trick
ἑαυτῆς	her own (genitive reflexive pronoun)
ὕστερον + gen	after
πένης, -ητος	poor
ἀνοίγω	I open
ὁπόσα	as much...as, however much
μή + imperative	don't!
μή + participle	(here) unless
μέχρι οὗ	until
αἰσχροκερδής, -ές	shamefully greedy

[Total for Question 2: 20]

3. Answer the questions on the following passage. **Do not translate unless specifically asked to do so.**

Thales shows Solon why he is unmarried and childless

ὁ δὲ Σόλων πρὸς Θαλῆν εἰς Μίλητον ἐλθὼν ἐθαύμαζεν ὅτι οὐκ ἔχει
γυναῖκα καὶ παῖδας. καὶ ὁ Θαλῆς τότε μὲν οὐδὲν εἶπε, μετὰ δὲ ὀλίγας
ἡμέρας πρὸς Σόλωνα ἔπεμψεν ἄνδρα ξένον, λέγοντα ὅτι <u>ἀρτίως</u> ἥκει ἐξ
Ἀθηνῶν. ἐπεὶ οὖν ὁ Σόλων ἠρώτησε τί νέον ἐστὶν ἐν ταῖς Ἀθήναις, ὁ ἀνὴρ
5   ἀπεκρίνατο οὕτως· "ἄλλο μὲν οὐδὲν ἦν, νεανίαν δέ τινα <u>ἔθαψαν</u>, καὶ πᾶσα ἡ
πόλις <u>ὠδύρετο</u>. ἦν γὰρ υἱὸς ἀνδρὸς ἀρίστου· ἐκεῖνος δὲ οὐ παρῆν, ἀλλα ἤδη
πολὺν χρόνον ἀπῆν." ὁ γὰρ Θαλῆς αὐτὸν ἐκέλευσε ταῦτα λέγειν.

ἀκούσας δὲ ταῦτα ὁ Σόλων εἶπεν οὕτως· "ὡς <u>δυστυχὴς</u> ἐκεῖνός ἐστιν·
τίνα δὲ ἐκάλουν αὐτόν;" ὁ δέ, "ἤκουσα τὸ ὄνομα, ἀλλὰ οὐ <u>μέμνημαι</u>." ὁ δὲ
10 Σόλων ἐφοβεῖτο, διότι ἄριστός τε ἦν καὶ ὁ υἱὸς ἐν ταῖς Ἀθήναις ᾤκει. τὸν
οὖν νεανίαν ἠρώτησεν εἰ <u>ὁ τεθνηκὼς</u> ἐκαλεῖτο ὁ τοῦ Σόλωνος υἱός, καὶ ἐπεὶ ὁ
νεανίας εἶπεν ὅτι ἐκείνου τοῦτο ἦν τὸ ὄνομα, ἐδάκρυεν. ὁ δὲ Θαλῆς γελάσας
εἶπεν οὕτως· "ταῦτα ἀποτρέπει με τοῦ γάμου. ἀλλὰ <u>θάρσει</u> περὶ τῶν λόγων·
οὐ γάρ εἰσιν ἀληθεῖς."

XENOPHON (adapted)

ἀρτίως	recently
θάπτω	I bury
ὀδύρομαι	I lament
δυστυχής, -ές	unfortunate
μέμνημαι	I remember
ὁ τεθνηκώς	the dead man
θαρσέω	I cheer up

(a) Why was Solon amazed (lines 1-2)?   [2]
(b) What was Thales' immediate reaction to this?   [1]
(c) After how long did he send the foreign man to Solon?   [1]
(d) What did the foreign man say to Solon (lines 3-4)?   [2]
(e) What did Solon ask the man (line 4)?   [1]
(f) What was the man's reply (lines 5-7)?   [6 x ½ = 3]
(g) Why did the man give this reply?   [2]
(h) Translate lines 8-9 ἀκούσας δέ ... μέμνημαι.   [3]
(i) Why does Solon cry in line 12?   [2]
(j) Why does Thales think Solon should cheer up (lines 13-14)?   [1]
(k) Explain in your own words why Thales shuns marriage.   [2]

[Total for Question 3: 20]

4. Translate the following sentences into Greek. Some of the words from questions **2 and 3** may help you:

(a) The wives were taking the money from the tombs [4]

(b) Sons become unfortunate men [4]

(c) It seems good to me to call the young men [4]

(d) They were not present but they heard everything [4]

(e) Ask if the kings are foreign! [4]

[Total for Question 4: 20]

5. Translate the following passage into English: **write your translation on alternate lines.**

After crossing a bridge into the territory of the Scythians, Darius receives advice from Coes, and presents the Ionians with a device for calculating the length of his absence.

ἐπεὶ δὲ ὁ Δαρεῖος καὶ ὁ πεζὸς στρατὸς ἐπὶ τὸν ποταμὸν ἀφίκοντο, καὶ ἐπεὶ πάντες <u>διέβησαν</u>, ἐκέλευσε τοὺς ῞Ιωνας, τὴν γέφυραν <u>λύσαντας</u>, ἕπεσθαι ἑαυτῷ. ἐπεὶ δὲ οὗτοι ἔμελλον <u>λῦσαι</u>, στρατηγός τις, Κώης ὀνόματι, εἶπε τάδε· "ὦ βασιλεῦ, ἐπὶ γῆν ἐθέλεις στρατεύεσθαι ἐν ᾗ οὔτε πολὺς σῖτός ἐστιν οὔτε πόλις· σὺ οὖν <u>ἔα</u> ταύτην τὴν γέφυραν <u>ἑστάναι</u>, φύλακας λιπὼν τοὺς αὐτὴν <u>ζεύξαντας</u>. καὶ <u>ἴσως</u> εὑρεῖν τοὺς Σκύθας δυνησόμεθα, <u>ἴσως</u> τε οὔ, ἀλλὰ ἡ οἴκαδε ὁδὸς ἡμῖν ἀσφαλὴς ἔσται· οὐ γὰρ <u>φοβοῦμαι μὴ</u> ὑπὸ Σκυθῶν μάχῃ <u>νικώμεθα</u> ἀλλὰ μή, οὐ δυνάμενοι εὑρεῖν αὐτούς, <u>πάθωμέν</u> τι <u>ἀλώμενοι</u>." μάλιστά τε <u>ἤσθη</u> τούτῳ Δαρεῖος, καὶ <u>ἀφάψας ἄμματα ἑξήκοντα</u> ἐν <u>ἱμάντι</u>, συνεκάλεσε τοὺς ᾿Ιώνων τυράννους καὶ εἶπε τάδε· "ἄνδρες ῞Ιωνες, ἐπειδὰν ἐμὲ ὁρᾶτε πορευόμενον ἐπὶ τοὺς Σκύθας, ἀπὸ τούτου τοῦ χρόνου ἀρξάμενοι λύετε <u>ἄμμα</u> ἐν ἑκάστης ἡμέρας. εἰ δὲ ἐν τούτῳ τῷ χρόνῳ μὴ <u>παρέσομαι</u>, ἀλλὰ παρῆλθον αἱ ἡμέραι τῶν <u>ἀμμάτων</u>, ἀπέλθετε οἴκαδε. μέχρι δὲ τούτου φυλάσσετε τὴν γέφυραν."

HERODOTUS (adapted)

διέβησαν	aorist of διαβαίνω	πάθωμεν	aor. subj. act. of πάσχω
λύω	(here) I pull down	ἀλάομαι	I wander about
ἐάω	I allow	ἤδομαι (aor. ἤσθην) + dat.	I am pleased with
ἑστάναι	'to stand'	ἀφάπτω	I tie
ζεύγνυμι (aor.part. ζεύξας) I build		τὸ ἄμμα, -ατος	knot
ἴσως	perhaps	-κοντα	(multiplies a number by 10)
φοβοῦμαι μή (+ subj.)	I fear that	ὁ ἱμάς, -άντος	strap
νικώμεθα	pres. subj. pass of νικαω	παρέσομαι	future of πάρειμι

[Total for Question 5: 25]

Eton College King's Scholarship Examination 2005

SCIENCE (SECTION 1)   **(60 minutes)**

*Candidate Number:*_____

INSTRUCTIONS

*Write your candidate number, **not your name**, in the space provided above.*

You should attempt ALL the questions. Write your answers in the spaces provided.
Continue on a separate sheet of paper if you need more space to complete your answer to any question.

Allow yourself about 12 minutes for each question.

The maximum mark for each question or part of a question is shown in square brackets.

In questions involving calculations, all your working must be shown.

For examiners' use only.

1	2	3	4	5	TOTAL

1. Iron is produced in blast furnaces from iron ore, which contains iron oxide. Coke is used as a source of carbon.

(a) Iron and carbon are both elements. What is meant by the term 'element'?

_____

_____ [2]

(b) The coke burns to produce carbon monoxide. What conditions would be needed to ensure a good yield of carbon monoxide?

_____

_____ [2]

(c) The carbon monoxide reacts with the iron oxide in the ore. Write a word equation for this reaction.

_____ [2]

(d) The blast furnace produces iron as a liquid, from which solid iron may be obtained by cooling. Describe the different ways in which the particles (atoms) of iron behave

i) in the solid _____

_____ [2]

ii) in the liquid _____

_____ [2]

(e) Blast furnace iron contains carbon as an impurity. The carbon can be removed by blowing oxygen through the molten material. Explain what you can deduce from this information about the positions of carbon and iron in the reactivity series.

_____

_____

_____ [2]

2. A student made some crystals of copper sulphate by following these instructions:

Warm some dilute sulphuric acid and add solid copper carbonate until no more will react. Filter. Evaporate water from the filtrate until you have a saturated solution, then leave to cool.

(a) Write a word equation for the reaction of dilute sulphuric acid with copper carbonate.

_____ [2]

(b) How would the student know when he had added enough copper carbonate?

_____

_____ [2]

(c) What is meant by a 'saturated solution'?

_____

_____ [2]

(d) When the saturated solution was cooled, blue crystals of copper sulphate appeared. What does this tell you about the solubility of copper sulphate in water?

_____

_____ [2]

(e) One careless student did not watch the evaporation, and only returned to his experiment some time after all the water had disappeared. He did not see any blue crystals. What would he have seen instead, and why?

_____

_____

_____ [2]

(f) In one lesson the copper carbonate ran out. A student suggested that it might still be possible to produce copper sulphate by doing the same experiment but using pieces of copper metal instead of copper carbonate. What do you think would happen if this was done? Explain your answer.

_____

_____

_____ [2]

3. Green plants carry out photosynthesis in the light. A class decided to investigate how light intensity affected the rate of photosynthesis in an aquatic plant. They were provided with the apparatus shown below.
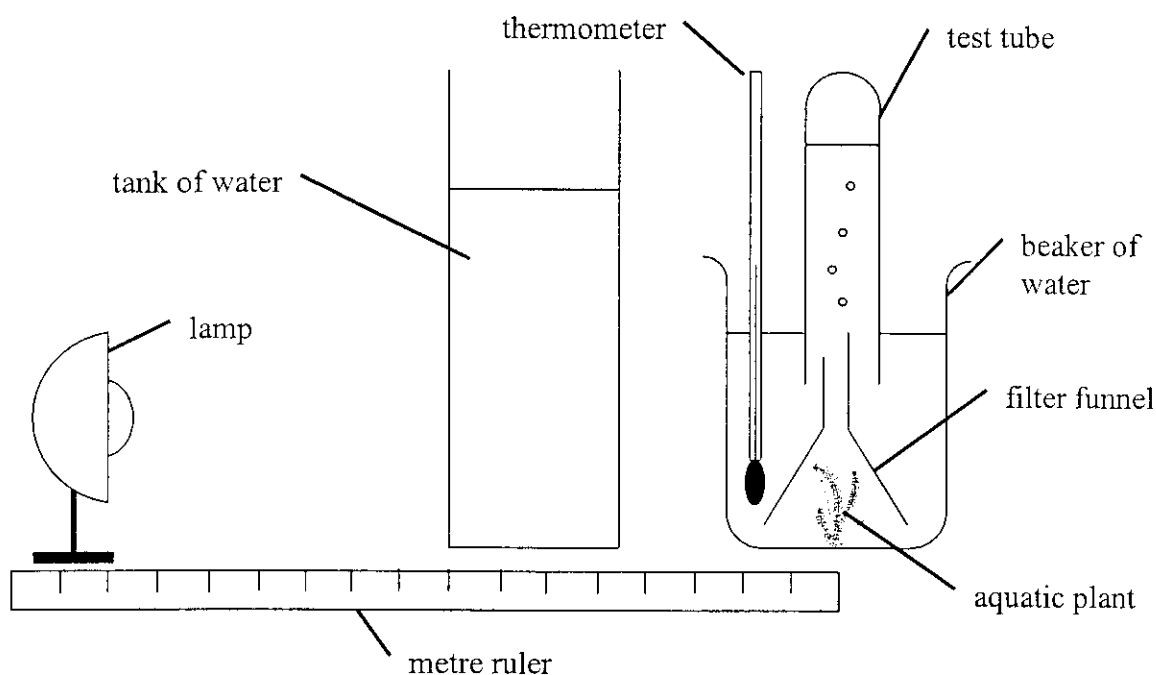
The pupils varied the distance of the lamp from the plant and recorded the number of bubbles of gas given off by the plant in two minutes for each distance.

(a) What is the name of the gas being collected in the test tube ?

_____ [1]

(b) What is the purpose of the tank of water in front of the beaker containing the plant ?

_____

_____ [2]

Here are the results the class collected:

Distance of lamp from plant / cm	Number of bubbles given off in two minutes
5	256
10	64
20	
	4
80	1

(c) Fill in the two gaps in the table. [2]

(d) What is the relationship between light intensity and rate of photosynthesis in the plant?

_____

_____ [2]

(e) Having moved the lamp to a new distance, state one thing the pupils should have checked before taking a new reading.

_____

_____ [1]

(f) Name two other environmental factors that can affect the rate of photosynthesis in plants.

_____

_____ [2]

This graph shows how light is absorbed by chlorophyll, the green leaf pigment that traps light during photosynthesis.
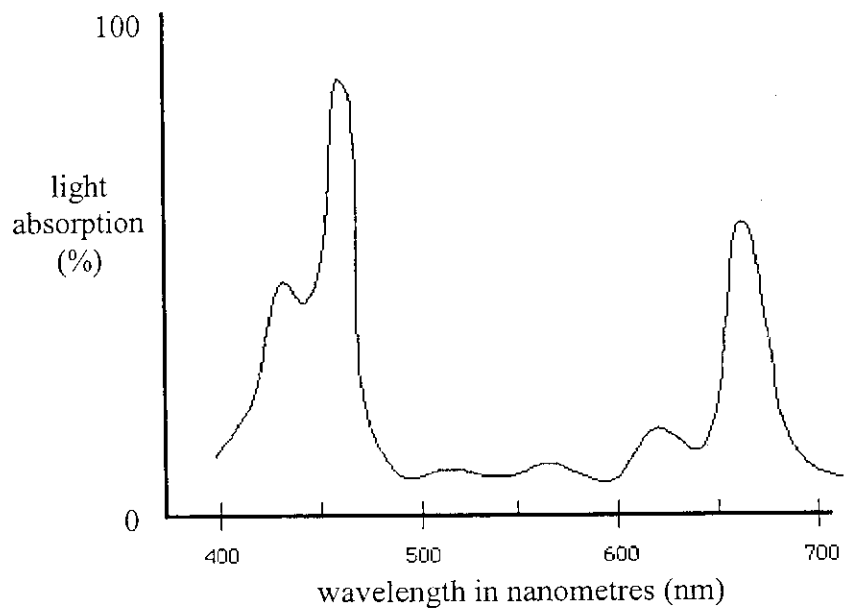
(g) What wavelength do you think corresponds to green light, and why?

_____

_____ [2]

4. Mammals are often described as **endotherms**; they maintain their body temperature at 37°C regardless of the external temperature. Lizards are **ectotherms** – their body heat is obtained directly from their surroundings.

a) Sketch two labelled lines on the axes below to show how the body temperature of endotherms and ectotherms varies depending on the external temperature. [2]

Body
temperature
/ °C

50

40

30

20

10

0

0   10   20   30   40   50

External temperature / °C
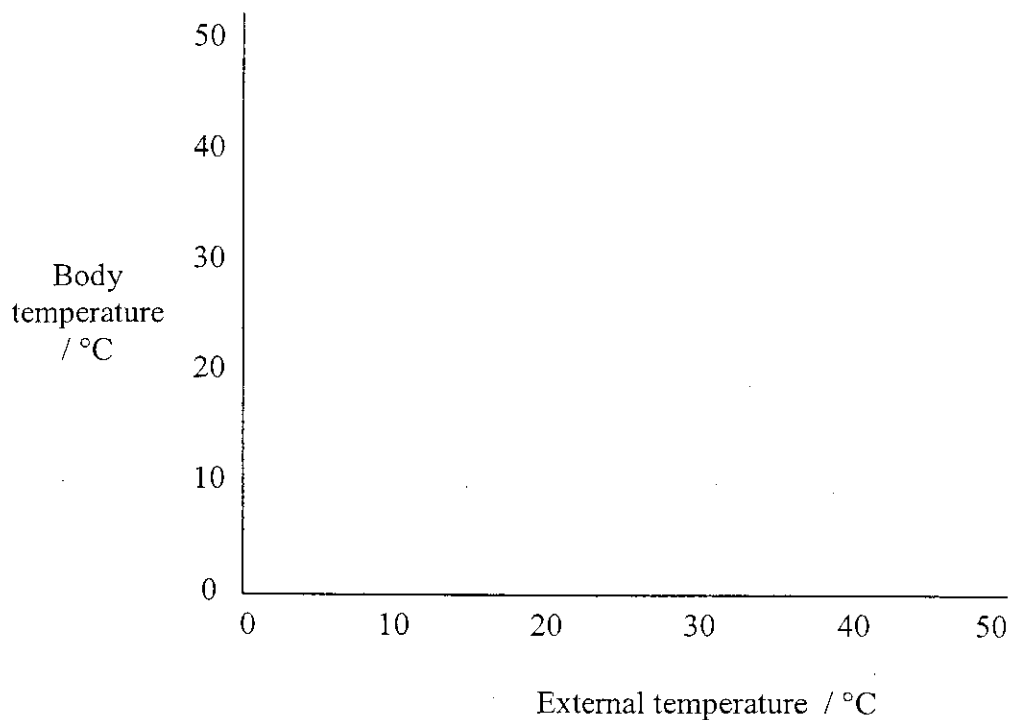
Oxygen is used in the process of respiration in living organisms. At temperatures below 20°C, an endotherm needs to increase the rate of respiration to generate heat so as to keep its body temperature at 37°C. Above 20°C the rate of respiration remains constant (this is termed the basal metabolic rate).

(b) Write down the word equation for aerobic respiration.

_____ [1]

(c) Sketch a line on the axes below to show how oxygen consumption changes with external temperature for an endotherm. [2]

Oxygen consumption / arbitrary units

2.5

2.0

1.5

1.0

0.5

0

0   10   20   30   40   50

External temperature /°C
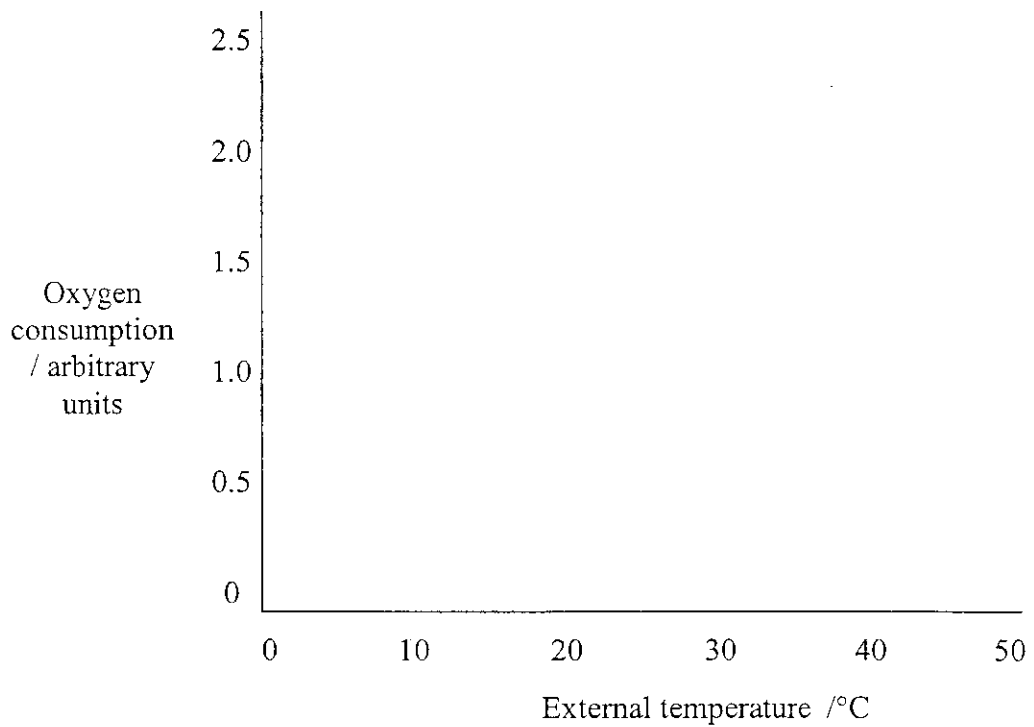
Question continues on next page

Haemoglobin is a protein found in red blood cells. The function of haemoglobin is to carry oxygen around the body from the lungs to respiring tissue.

Below is a graph showing the oxygen saturation of two types of haemoglobin (normal and foetal) from inside a red blood cell at different concentrations of oxygen in the surroundings. As can be seen from the graph, the saturation of foetal haemoglobin with oxygen is different from normal haemoglobin.
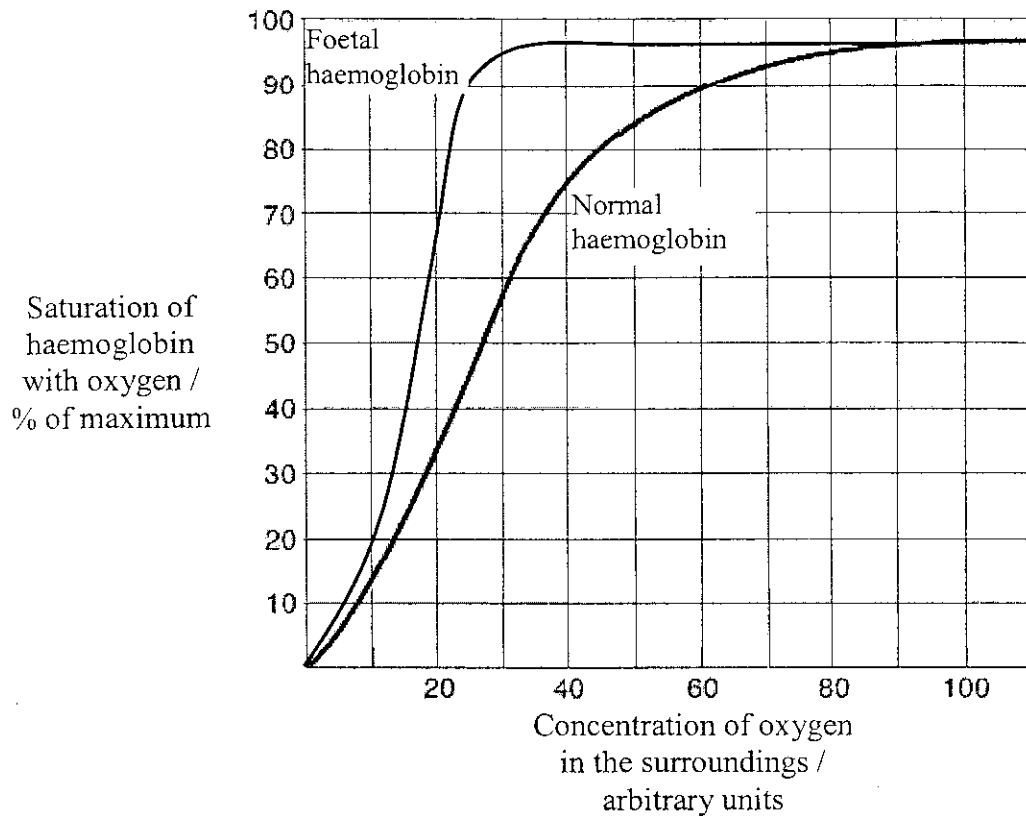
Each haemoglobin molecule can carry up to four oxygen molecules. An average red blood cell has around 280 million haemoglobin molecules.

(d) How many oxygen molecules can an average red blood cell (containing normal haemoglobin) carry when it is in an oxygen concentration of 60 arbitrary units in the surroundings? **Show your working.**

_____

_____

_____

_____ [3]

Exchange of oxygen between the mother and developing foetus occurs in the placenta. At the actual site of oxygen exchange both normal haemoglobin and foetal haemoglobin are found in an environment in the placenta where the oxygen concentration is 20 arbitrary units.

(e) With reference to the curves on the graph above, explain the benefit of foetal haemoglobin being produced in the red blood cells of a developing foetus.

_____

_____

_____

_____

_____ [2]

When babies are born, foetal haemoglobin is replaced by normal haemoglobin. The normal haemoglobin that exists in our red blood cells binds to oxygen relatively loosely.

(f) What would be the problem if normal haemoglobin did bind to oxygen very tightly?

_____

_____ [1]

(g) What might be the symptoms of a person if they did have haemoglobin that did bind to oxygen more strongly than normal haemoglobin?

_____

_____ [1]

5. On a day when there is no wind, a skydiver steps from a hot air balloon and free-falls for a while. She then opens her parachute and floats down to the ground. A graph of her speed against time is shown below.
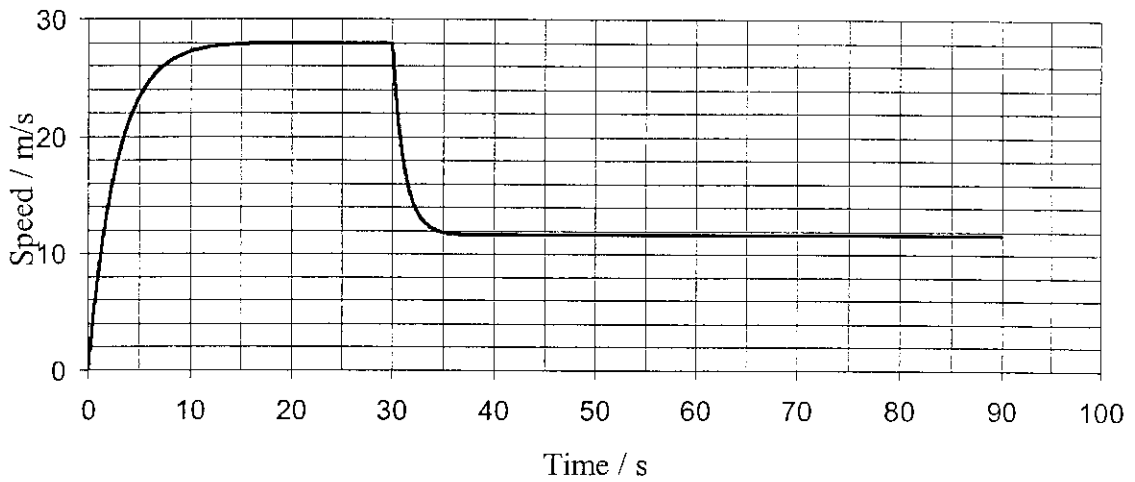
(a) Mark on the graph (with an **X**) the time at which she opens her parachute. [1]

(b) Describe what happens to the skydiver's speed in the first 15 seconds.

_____

_____

_____ [2]

(c) Here is a picture of the skydiver just as she has stepped from the balloon.

At t = 0s
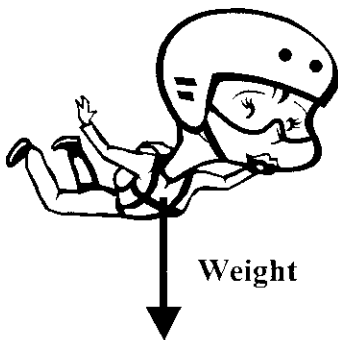
Weight

Explain why the only force acting on her at this moment is her weight.

_____

_____

_____

_____ [1]

(d) Below is a picture of the skydiver 15 seconds into her fall. Her weight has been marked on this diagram. Add an appropriately-sized arrow to represent the force of air resistance. (The length of the arrow should indicate the relative size of the force - an arrow twice as long as the weight arrow represents a force twice as large as the weight.)

At t = 15 s

Explain your answer:

_____

_____

_____

_____ [2]
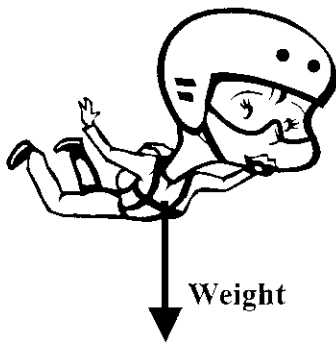
Weight

(e) Describe what happens to the air resistance during the first 15 seconds.

_____

_____ [1]

(f) Here is a picture of the skydiver at 32 seconds. Her weight has been marked on the diagram, add an arrow to represent the force of air resistance. (You will not be able to determine the precise length of this arrow, but you should be able to indicate an approximate size.)

[1]
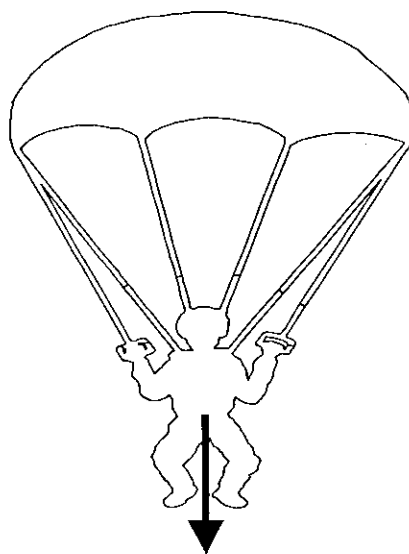
(g) Delete the two inappropriate phrases:

The air resistance on the skydiver at 60 seconds is
greater than / the same as / smaller than
the air resistance on her at 20 seconds. [1]

(h) For the phrases below tick those that are true and place a cross by those that are untrue.

As the skydiver opens her parachute:

☐ **Her speed decreases**

☐ **She starts to move upwards**

☐ **The air resistance increases** [3]

[End of paper]

Eton College King's Scholarship Examination 2005

SCIENCE (SECTION 2 - DATA ANALYSIS)   (30 minutes)

*Candidate Number:*_____

This paper describes the results of some experiments. Read the information and answer the questions in the spaces provided.

Additional materials required: Graph Paper.

For examiners' use only.

Total	

1. The circuit shown below was set up:

An ammeter measures the current flowing through the ammeter

A voltmeter measures the voltage across the resistor.
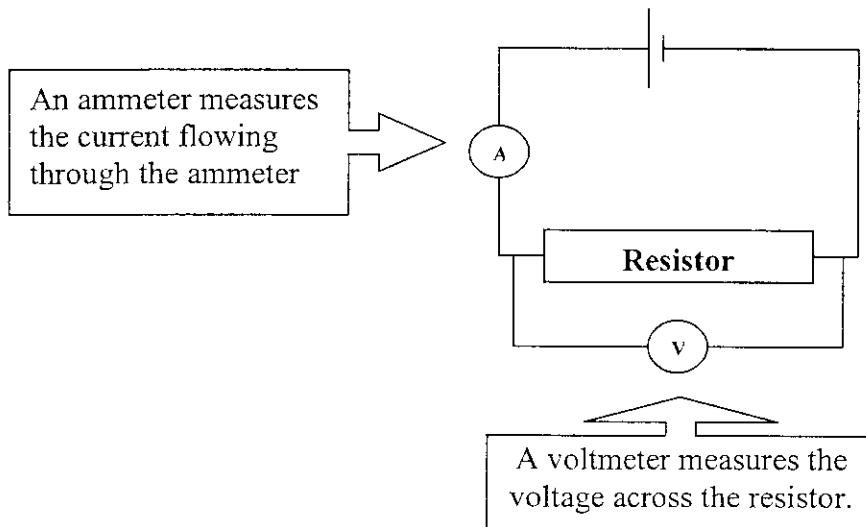
Charge is measured in coulomb (given the symbol C). A current of 1 ampere (or 1A) means that 1C of charged particles passes through the ammeter each second.

(a) The ammeter read 2A:

    i)   How much charge passes by in 1 second?
        (Hint: your answer will be measured in coulomb.)

        _____ [1]

    ii)   How much charge passes by in 1 minute?

        _____ [1]

A voltage of 1 volt (or 1V) across a resistor means that each coulomb of charged particles that passes through the resistor deposits 1 joule (or 1J) of energy in the resistor.

(b) The voltmeter in the circuit above read 6V:

    i)   How much energy is deposited in the resistor by each coulomb of charged particles?
        (Hint: your answer will be measured in joule.)
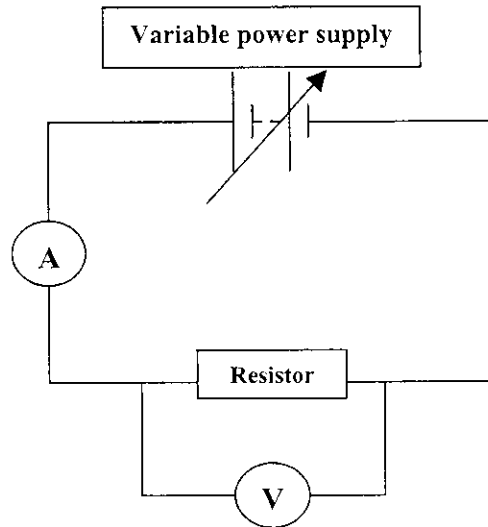
        _____ [1]

    ii)   How much energy is deposited in the resistor each second?

        _____

        _____ [1]

    iii) What form does the energy take when it is deposited in the resistor?

        _____ [1]

2. A **different** resistor was connected into a circuit with a **variable** power supply:

Here is the data collected:

Voltage	Current	Resistance	Energy deposited in one second
volt	amp	ohm	joule
(2dp)	(3dp)		
1.50	**0.009**		
3.00	0.019		
4.50	0.028		
6.00	0.038		

Resistance is measured in ohm and is calculated using:

$$Resistance = \frac{Voltage}{Current}$$

(a) Calculate the resistance for the first set of data (shown in bold). Show your working in the space below and record your answer (using an appropriate number of decimal places) in the table above.

_____

_____ [2]

(b) Complete the resistance column in the table above. [2]

(c) Which of your calculated values of resistance is the least accurate and why?

_____

_____

_____ [2]

(d) Calculate the energy deposited in the resistor in one second for the first set of data (shown in bold). Show your working in the space below and record your answer (using an appropriate number of decimal places) in the table on the previous page.

_____

_____ [2]

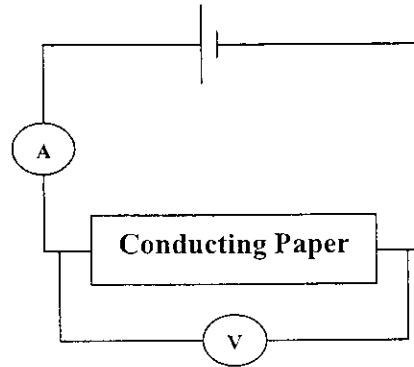(e) Complete the 'energy deposited in one second' column in the table.   [2]

Ohm's law says that a resistor has a constant resistance - doubling the voltage should double the current, so that the ratio of voltage/current will remain constant. This law only holds true if factors such as temperature remain constant.

(f) By considering your completed table, decide whether the data collected in this experiment suggests that Ohm's law is true or not. In your answer explain how you reached your conclusion. *(Hint: you may like to discuss the accuracy of the readings taken and which readings are the ones most likely to have been effected by any temperature change.)*

_____

_____

_____

_____

_____

_____ [4]

3. It is possible to buy sheets of paper that are coated with a conducting paint. The paper can be cut up into any shape desired. This is a convenient way of making resistors to use in circuits.

In the next experiment a student decided to cut out a series of rectangles. All the rectangles had the same width, but they had different lengths. He placed each rectangle in turn into the circuit shown below and took readings of voltage and current.

Here is a table of the data collected:

Length	Voltage	Current	Resistance	Energy deposited in one second
metre	volt	amp	ohm	joule
(2dp)	(2dp)	(3dp)		
0.01	6.00	1.502		
0.02	6.00	1.191		
0.03	6.00	0.908		
0.04	6.00	0.732		
0.05	6.00	0.607		
0.06	6.00	0.489		
0.07	6.00	0.430		
0.08	6.00	0.382		
0.09	6.00	0.328		
0.10	6.00	0.303		

(a) Complete the column for resistances of the different length strips in the table above. [3]

(b) Plot a graph of resistance (y-axis) against length (x-axis). *Graph paper is provided separately, be sure to write your candidate number on your graph and hand it in with the rest of your work.* [4]

(c)   On your graph include a best fit **straight** line. Explain below why you did or didn't choose to make your line pass through the point (0,0).

_____

_____

_____

_____ [2]

(d)   Describe the relationship between resistance and length.

_____

_____ [2]

(e)   For each of the strips calculate the energy deposited in one second. Record your answers in the table.   [3]

(f)   Explain as fully as you can why the data points do not fall exactly on a straight line.

_____

_____

_____

_____ [3]

(g)   Suggest ways to improve this experiment, i.e. modifications to the experiment that would make the data points fall closer to a straight line.

_____

_____

_____

_____

_____

_____ [4]

Eton College King's Scholarship Examination 2005

MATHEMATICS B (One and a half hours)

Answer as many questions as you can. Each of the ten questions carries ten marks. Show all your working. Calculators are not allowed.

1. (a) A square of side length n has all its lengths increased by 1. Find, in terms of n, the difference between the areas of the two squares.
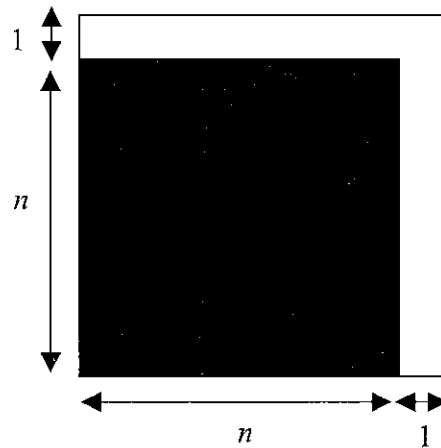
   (b) The squares of two consecutive positive numbers differ by 2005. Find the sum of these two numbers.

2. (a) Write down which of the following are prime numbers :
$$2^4 - 1 \qquad\qquad 2^5 - 1 \qquad \text{and} \qquad 2^6 - 1$$

   (b) Simplify $\left(x^{50} - 1\right)\left(x^{50} + 1\right)$

   (c) Use (b) to say whether or not $2^{100} - 1$ is a prime number.

[Please turn over]

3. (a) Express the following expression as a fraction in its lowest form:
$$\left(1-\frac{1}{2}\right)\times\left(1-\frac{1}{3}\right)\times\left(1-\frac{1}{4}\right)\times\left(1-\frac{1}{5}\right)\times\left(1-\frac{1}{6}\right)\times\left(1-\frac{1}{7}\right)\times\left(1-\frac{1}{8}\right)\times\left(1-\frac{1}{9}\right)\times\left(1-\frac{1}{10}\right).$$

(b) Simplify $(1-x)(1+x+x^2+x^3)$ and $(1-x)(1+x+x^2+x^3+x^4)$.

(c) Hence express $\dfrac{1+x+x^2+x^3+x^4}{1+x+x^2+x^3}$ as a fraction in its simplest form when $x=\dfrac{1}{2}$.

4. A boy walks in a straight line from the point C in the diagram shown below to collect some water from the river at the point X. He then walks in a straight line to the point D.
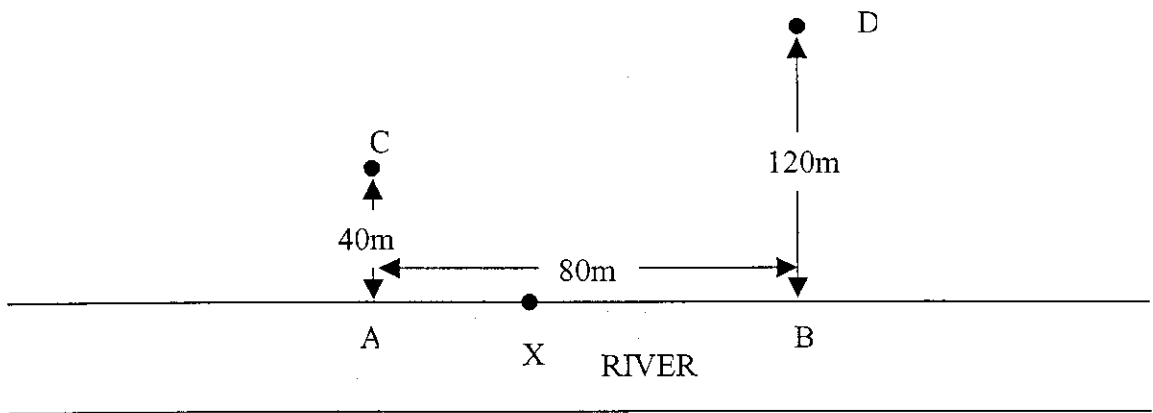

(a) If AX is 30m then how far is the boy's journey?
(b) By considering the reflection of the point D in the line AB, find the length AX which minimises the boy's total journey from C to X to D.

5. The trapezium ABCD shown below has height 20cm and perimeter 200cm. The shorter of the two parallel sides has length 30cm and the shorter of the two other sides is 25cm.
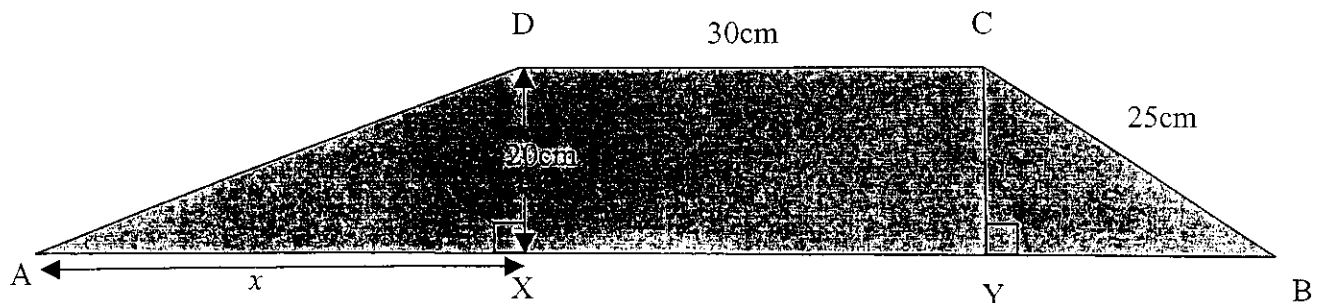

(a) Calculate the length YB.
(b) Use Pythagoras' theorem on the triangle AXD to find x.
(c) Hence find the area of the trapezium.

6. An equilateral triangle ABC of side length 2 is shown below. E, F and G are the points on BC, AC and AB respectively such that AE is perpendicular to BC, BF is perpendicular to AC and CG is perpendicular to AB. AE, BF and CG all intersect at the point X.
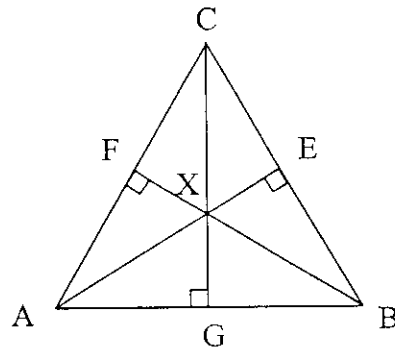
(a) Find the exact height of the triangle ABC.
(b) Write down the angles GAX and AXG.
(c) Explain very briefly why triangle AXG is similar to triangle CAG.
(d) Hence find the exact length XG.
(e) Write down the exact area of the largest circle that can fit inside the triangle ABC.

7. (a) What is the internal angle of a regular hexagon?
    (b) The shaded hexagon shown below is not regular but all its angles are equal. The lengths of all its sides are marked in the diagram.
    All the points of the hexagon lie on the side of an equilateral triangle as shown below. Find, as a fraction, the proportion of this equilateral triangle that is shaded.
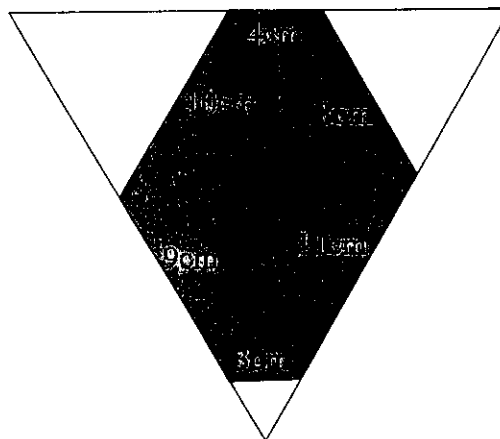
    (c) Find the side length of the other equilateral triangle upon whose sides all the points of the hexagon lie.

[Please turn over]

8. In the following equations x, y and z are all positive whole numbers:

$$(x+y)(x+y+z) = 50$$
$$(x+z)(x+y+z) = 70$$
$$(y+z)(x+y+z) = 80$$

(a) Add the three equations together to find the value of $(x+y+z)^2$.

(b) Hence find x, y and z.

9. A circle centre O and radius 1 rests against a vertical wall AB and a horizontal floor BC as shown below. The point X is the point on the circle closest to B and the point Y is the point on the circle furthest from B.
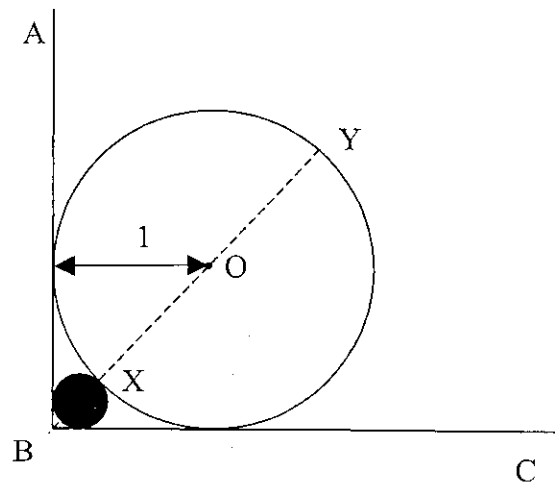
(a) Calculate the exact length OB.
(b) Hence find the exact lengths BX and BY.
(c) Write down the ratio of OX : BY.
(d) By using the answers to (b) and (c), or otherwise, find the radius of the largest circle that can fit between the circle of radius 1, the wall AB and the floor BC.

10. (a) In how many different ways can I put 3 letters into 3 addressed envelopes such that no envelope contains the correct letter?
    (b) In how many different ways can I put 4 letters into 4 addressed envelopes such that no envelope contains the correct letter?
    (c) In how many different ways can I put 5 letters into 5 addressed envelopes such that no envelope contains the correct letter?

[End of paper]

Eton College King's Scholarship Examination 2005

HISTORY AND GEOGRAPHY   **(One and a half hours)**

Answer THREE questions, AT LEAST ONE to be chosen from each section.

SECTION 1: HISTORY

1.   How was William I able to conquer and consolidate his control of England between 1066 and 1072?

2.   Why was Henry II's relationship with Thomas Becket so 'turbulent'?

3.   What was at stake for England in the Hundred Years war?

4.   How significant was Henry VIII's 'Break with Rome' in the emergence of England as a Protestant nation by 1603?

5.   'She has a reputation far in excess of her achievements'. How fair is this judgement on the reign of Elizabeth I?

6.   To what extent can the personal failings of Charles I explain the outbreak of civil war in England in 1642?

7.   Why did James II flee England in 1688?

8.   What was the significance of the Reform Act of 1832?

9.   Why was the repeal of the Corn Laws such a controversial issue for the Conservative Party in the 1840s?

10.   How accurate is it to characterise British statesmen of the late nineteenth century as 'reluctant imperialists'?

11.   The historian Leopold von Ranke saw the task of the historian as being 'only to say, how it really was'. How far do you think historians can establish the 'truth' about what happened in the past?

SECTION 2: GEOGRAPHY

1. Using examples that you have studied, discuss the problems faced by less economically developed countries that export only a limited range of primary products.

2. Southern England is at approximately the same latitude as northern Ontario in Canada, yet the climates of the two areas are very different. Describe and explain these differences.

3. 'National parks are being loved to death.' How far do you agree with respect to Britain's national parks?

4. Why does the management of one area of coastline sometimes have undesirable consequences further along the coast?

5. 'Current levels of world energy consumption and production are not sustainable' (UN Division for Sustainable Development). What are the potential consequences of this, and how optimistic are you that sustainable development can be achieved?

6. How does the theory of plate tectonics explain the distribution of mountain ranges?

7. Using examples, discuss the ways in which the physical geography of a settlement affects its potential for economic development.

8. Discuss the proposition that efforts to reduce the impact of natural disasters have focused too much on the physical issues and too little on the human ones.

9. Using examples that you have studied, discuss the problems caused by rapid population growth in developing world cities.

10. Contrast water and wind as agents of erosion.

11. How have agricultural practices changed in Britain since the Second World War, and how do you see British agriculture changing in the future?

12. What do you think is the most pressing environmental problem facing society today and how should it be dealt with? Support your answer with examples from your studies.

Eton College King's Scholarship Examination 2005

GENERAL II (One and a half hours)

*Answer **two** questions.*

Marks will be awarded for clear, interesting and considered arguments.

Spend about 45 minutes on each question.

1. Is the death of a thousand more to be lamented than the death of one?

2. Is translation possible?

3. 'Britain should develop closer relations with European countries than with the United States.' Discuss.

4. What is the purpose of travel?

5. Should religious leaders be more critical of standards of moral behaviour in Britain today?

6. Is there such a thing as a good or evil nation?

7. 'It is wrong to pay a footballer more than a political leader.' Discuss.

8. Is democracy the best form of government?

9. 'Given the number of people who believe in God it is unreasonable to deny his existence.' Discuss.

10. 'Art should be totally new and creative, and it should open doors for new thoughts and new experiences.'
    Do you agree? Explain your view.

[End of paper]

SPECIMEN PAPER

Eton College King's Scholarship Examination 2005

HISTORY, GEOGRAPHY AND DIVINITY   (One and a half hours)

Answer THREE questions from at least two of sections A, B and C.

SECTION A : HISTORY

1. How was William I able to conquer and consolidate his control of England between 1066 and 1072?

2. Why was Henry II's relationship with Thomas Becket so 'turbulent'?

3. What was at stake for England in the Hundred Years war?

4. How significant was Henry VIII's 'Break with Rome' in the emergence of England as a Protestant nation by 1603?

5. 'She has a reputation far in excess of her achievements'. How fair is this judgement on the reign of Elizabeth I?

6. To what extent can the personal failings of Charles I explain the outbreak of civil war in England in 1642?

7. Why did James II flee England in 1688?

8. What was the significance of the Reform Act of 1832?

9. Why was the repeal of the Corn Laws such a controversial issue for the Conservative Party in the 1840s?

10. How accurate is it to characterise British statesmen of the late nineteenth century as 'reluctant imperialists'?

11. The historian Leopold von Ranke saw the task of the historian as being 'only to say, how it really was'. How far do you think historians can establish the 'truth' about what happened in the past?

SECTION B : GEOGRAPHY

1. 'The current pattern of world trade makes it difficult for less economically developed countries to catch up with those that are more economically developed.' Do you agree?

2. Discuss the importance of rock type in the evolution of landscape.

3. Why do natural disasters claim so many more lives in the developing world than in the developed world?

4. With a need to build 5.5 million new homes by 2014, is it time for Britain to scrap its Green Belt policy?

5. Is it possible to reconcile the conflicting aims of recreation and conservation in national parks?

6. In what ways has the theory of plate tectonics revolutionised our understanding of volcanic activity?

7. How has the evolution of satellite technology helped in the field of Geography?

8. What impacts might global warming have on Britain's coastal geography?

9. What is meant by 'sustainable development', and how relevant is this concept in relation to natural resources?

10. To what extent can watershed management reduce the danger of river floods?

SECTION C : DIVINITY

1a.   In what ways might the Book of Ruth be considered to be feminist?

OR

1b.   'The story of Abraham's near sacrifice of Isaac teaches that God is totally unreasonable.' Discuss the story in the light of this statement.

2a.   'The story of Jesus' cure of the paralysed man should be interpreted as a parable and not as a miracle.' Discuss.

OR

2b.   'Jesus' parable of the Sower and Seed summarises all of his parables.' Discuss with reference to the parables you have studied.

3.   'I will never be happy as long as I desire to be happy.' To what extent does Buddhism offer a satisfactory answer to this problem?

4.   What justification is there for Jews to keep to the kosher food laws today?

5.   'I believe in... the resurrection of the body.' Why might the resurrection of the body be the most important Christian belief?