Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						7	0	4	2	/	0	1	Signature	

Paper Reference(s)

7042/01

Examiner's use only

Team Leader's use only

London Examinations GCE

Human Biology

Ordinary Level

Paper 1

Tuesday 20 January 2009 – Morning

Time: 1 hour 15 minutes

Materials required for examination
Ruler

Items included with question papers
Nil

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total	

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.
Answer **ALL** questions in the spaces provided in this question paper.
Some questions must be answered with a cross in a box (☒). If you change your mind, put a line through the box (☒) and then mark your new answer with a cross (☒).

Information for Candidates

Calculators may be used.
The total mark for this paper is 100. The marks for parts of questions are shown in round brackets: e.g. **(2)**.
This paper has 9 questions.
All blank pages are indicated.

Advice to Candidates

Write your answers neatly and in good English.
In calculations, show ALL the steps in your working.

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Turn over

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Answer ALL the questions.

1. (a) The list below includes some parts of the eye and some parts of the ear.

auditory nerve	ciliary body	cochlea	iris	lens	optic nerve
ossicles	retina	semi-circular canals	tympanum (ear drum)		

Complete the table below using the correct term from the list to match each of the descriptions.

Description	Part of eye or ear
A light sensitive layer	
Contains muscles which change the shape of the lens	
Sound waves make it vibrate	
Turns vibrations into nerve impulses	
Carries nerve impulses from the retina to the brain	
Carry vibrations across the middle ear	
Helps with balance	
Controls the amount of light entering the eye	

(8)

(b) Explain why a person who is blind in one eye would find it harder to catch a ball than a person who has normal vision.

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(3)

Q1

(Total 11 marks)

Leave blank

2. (a) The paragraph below describes the way in which plants make their food. Complete the paragraph by filling in the blanks with the correct word or words.

Plants make their food by a process called .....

The energy for this process is obtained from ..... The energy is absorbed by the leaves using the green pigment ..... As a way of increasing the amount of energy that can be absorbed, leaves usually have a large .....

The gas ....., which is needed for this process, is absorbed by the leaves from the atmosphere. This gas combines with ..... absorbed by the roots from the soil. In this process ..... is made. This can be stored in the form of ..... in the plant.

(8)

(b) Leaves are very thin. Suggest why this is an advantage to the plant in carrying out the process described in (a).

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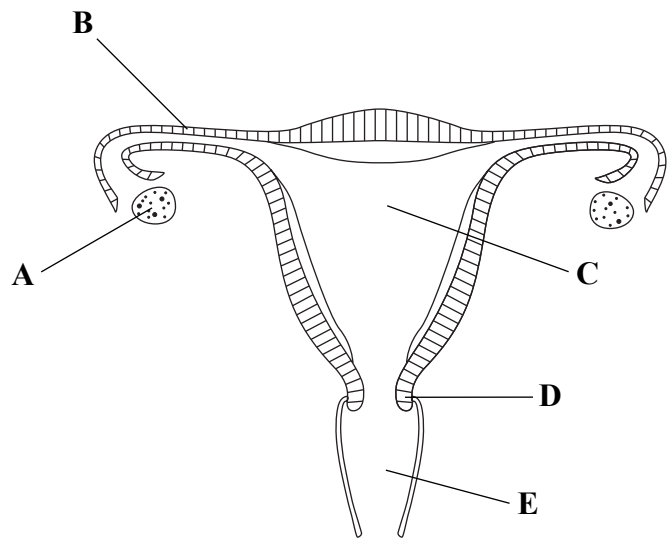
(2)

Q2

(Total 10 marks)

Leave blank

3. The diagram below shows the female reproductive system.



(a) Name the parts labelled **A**, **B**, **C** and **D**.

A .....

B .....

C .....

D .....

(4)

(b) Put a cross (☒) in the box to show where each of the following takes place.

	A	**B**	**C**	**D**	**E**
Sperms are deposited during sexual intercourse	☒	☒	☒	☒	☒
Ova (eggs) are produced	☒	☒	☒	☒	☒
Where fertilisation normally occurs	☒	☒	☒	☒	☒
Where the fetus will develop	☒	☒	☒	☒	☒

(4)

Leave blank

(c) (i) Suggest the advantage of the male releasing a large number of sperm at one time.

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(2)

(ii) Describe **two** structural differences between a sperm and an ovum and for each difference explain how it helps in the process of reproduction.

1. Difference .....

.....

Explanation .....

.....

2. Difference .....

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Explanation .....

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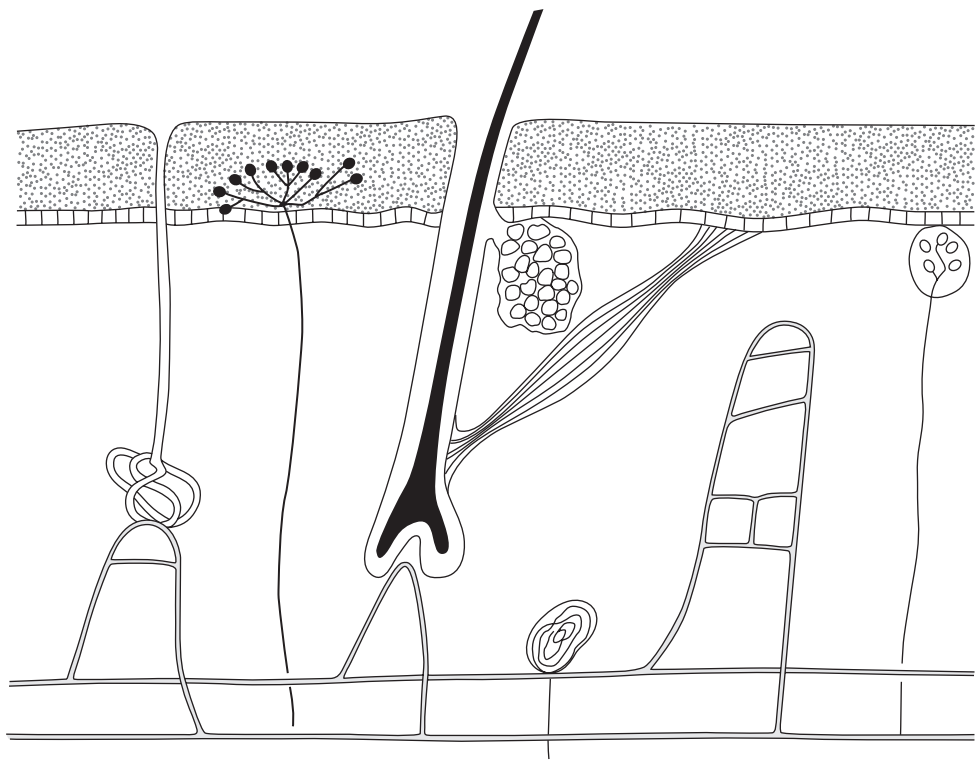
(4)

Q3

(Total 14 marks)

Leave blank

4. The diagram below shows a section through the human skin on a cold day.



(a) Describe **two** ways in which the structures of the skin would be different on a hot day.

1 .....

.....

2 .....

.....

(2)

(b) Describe **three** ways in which the skin protects the body.

1 .....

.....

2 .....

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3 .....

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(3)

(c) Suggest why the temperature of the body must be kept at a constant level.

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(1)

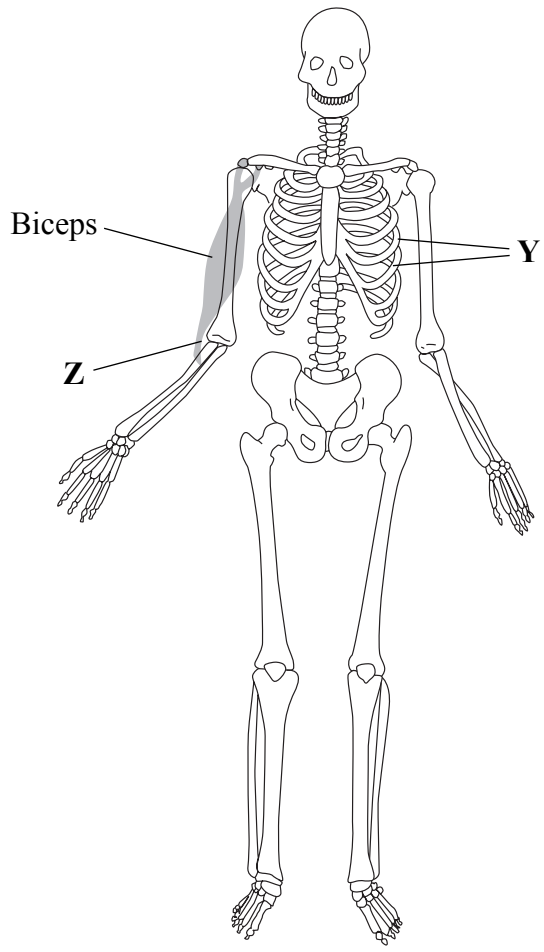
(Total 6 marks)

Leave blank

Q4

Leave blank

5. The diagram below shows the human skeleton viewed from the front.
The biceps muscle is shown on the upper right arm.



(a) (i) Name the structures labelled **Y**.

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(1)

(ii) Describe **two** functions of these structures.

1 .....

.....

2 .....

.....

(2)

(b) (i) On the diagram, draw a line to show where one ball and socket joint is to be found and label it **BS**.

(1)

(ii) On the diagram, draw a line to show where one hinge joint is to be found and label it **H**.

(1)

Leave blank

(iii) Explain why a ball and socket joint is found at the place you have shown rather than a hinge joint.

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(2)

(c) Describe the function of structure **Z**.

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(2)

(d) Describe how the biceps muscle raises the forearm.

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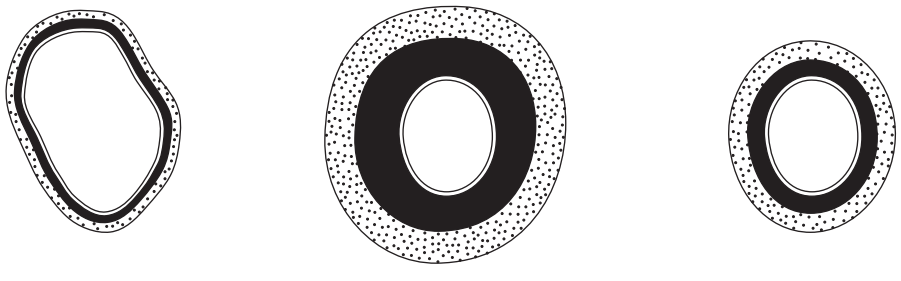
(2)

Q5

(Total 11 marks)

Leave blank

6. (a) The diagrams below show transverse sections (TS) of three human blood vessels – the aorta, another artery and a vein. The diagrams have been drawn to approximately the same scale.



A **B** **C**

(i) In each case put a cross (☒) in one box to identify which of the blood vessels shown in the diagram is:

	A	**B**	**C**
a vein	☒	☒	☒
an artery	☒	☒	☒
the aorta	☒	☒	☒

(3)

(ii) Describe **three** differences, not shown in the diagrams, between arteries and veins.

1 .....

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2 .....

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3 .....

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(3)

Leave blank

(b) (i) Name the type of blood vessel found between arteries and veins.

.....

(1)

(ii) In the space below, draw a transverse section (TS) of this type of blood vessel.

(2)

(c) (i) Name the chamber of the heart from which blood leaves to pass to the lungs.

.....

(1)

(ii) Name the blood vessel in which blood returns to the heart from the lungs.

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(1)

Q6

(Total 11 marks)

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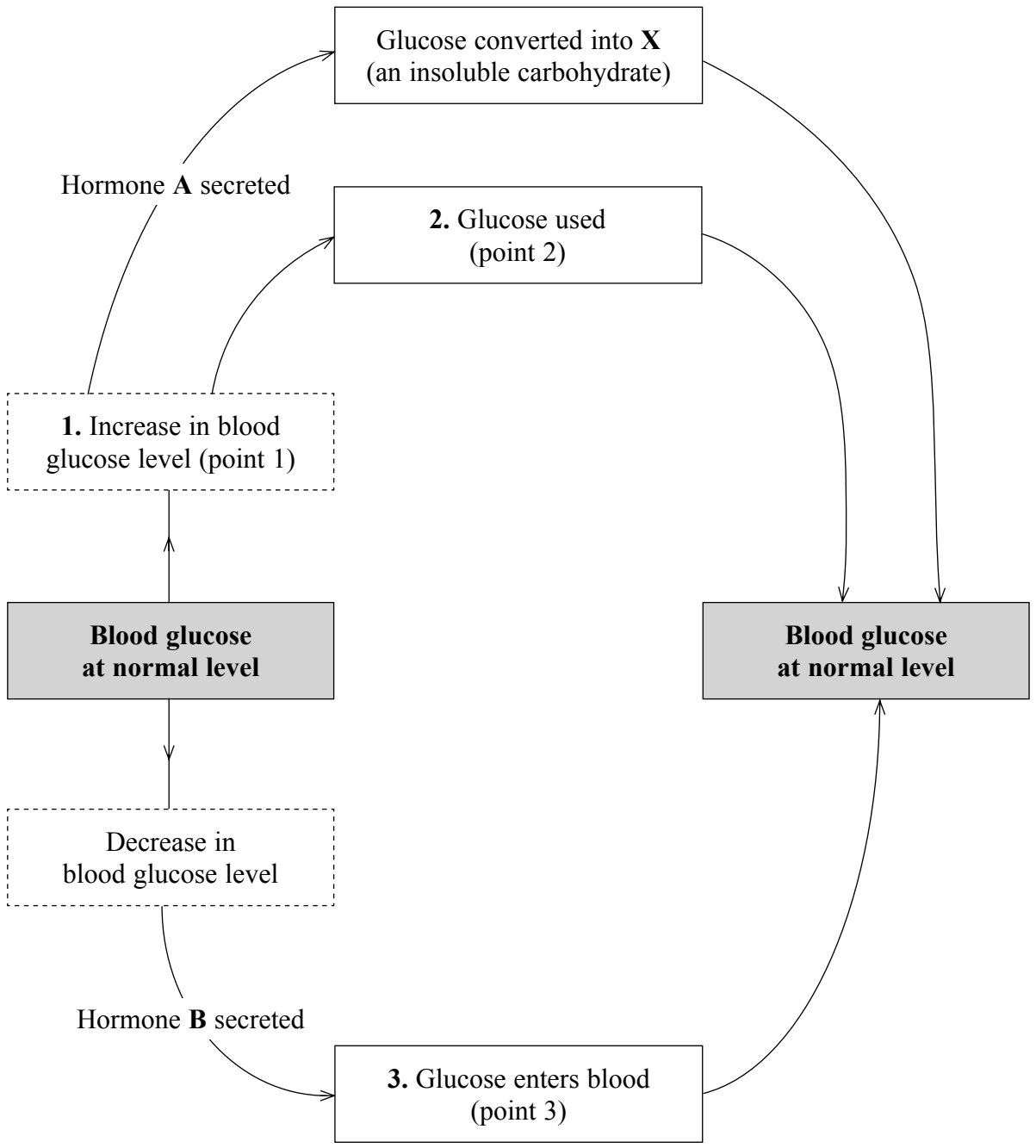
7. The control of blood glucose level is an example of homeostasis.
The diagram below shows how the control processes work.



(a) Explain what is meant by the term **homeostasis**.

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(2)

Leave blank

(b) (i) Name hormone **A** and hormone **B** shown on the diagram.

A .....

B .....

(2)

(ii) Give **one** reason why **A** and **B** are described as hormones.

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(1)

(c) Suggest a reason for the increase in blood glucose level shown at point 1 on the diagram.

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(2)

(d) (i) Name the insoluble carbohydrate **X** shown on the diagram.

.....

(1)

(ii) Name **two** places where this carbohydrate may be stored.

1 .....

2 .....

(2)

(e) Name a chemical process which may 'use' the blood glucose at point 2 on the diagram.

.....

(1)

(f) Glucose enters the blood at point 3 on the diagram. Suggest how this glucose may have been produced.

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(1)

Leave blank

(g) If the blood glucose level is allowed to rise much above normal, suggest and explain the effects this would have on red blood cells.

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(3)

Q7

(Total 15 marks)

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TURN OVER FOR QUESTION 8

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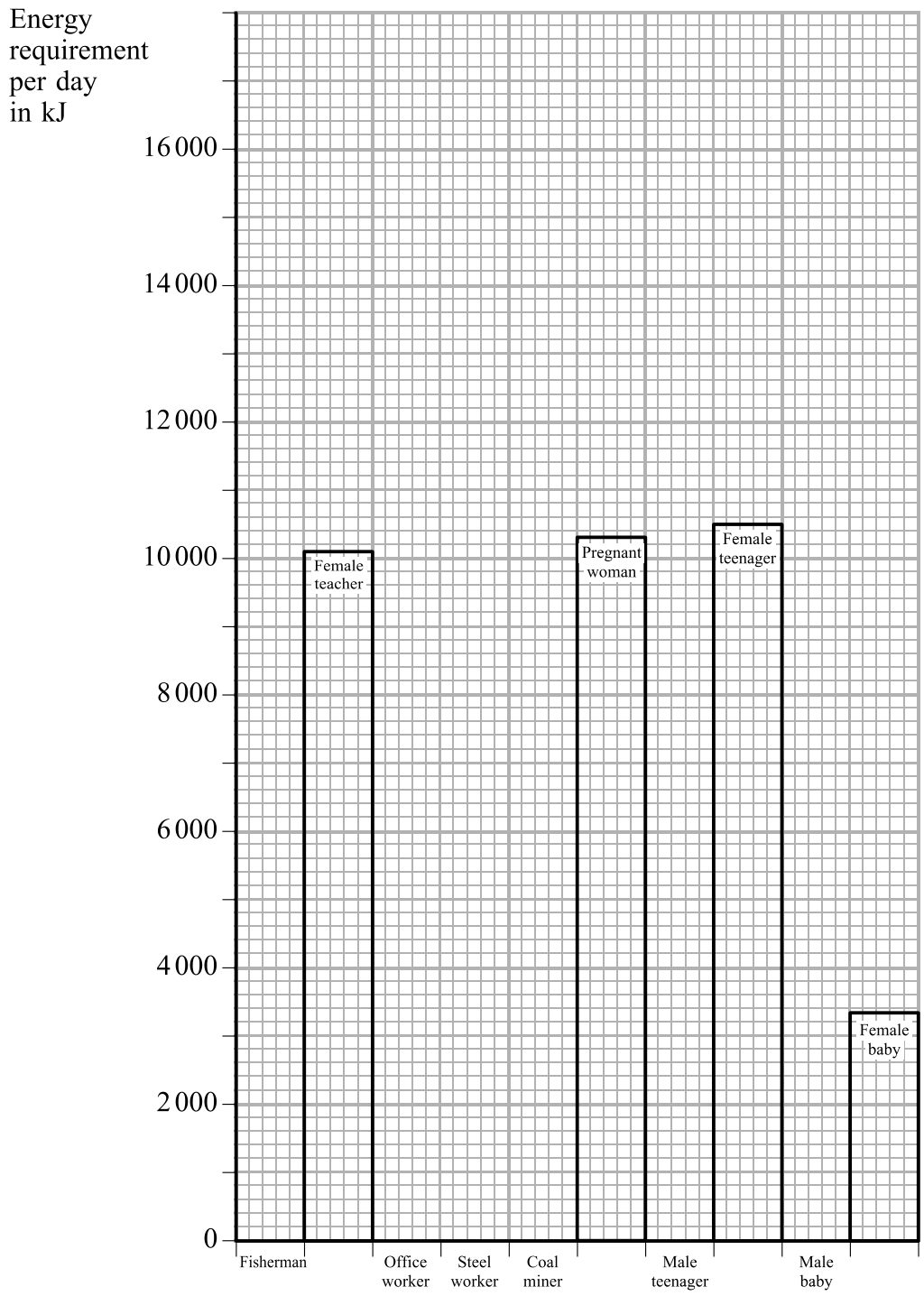
8. The table below shows the daily energy requirements of some different people.

Type of person	Sex	Energy required per day in kJ
Fisherman	M	11 500
Teacher	F	10 100
Office worker	M	11 300
Steelworker	M	15 150
Coal miner	M	15 175
Pregnant woman	F	10 300
Teenager	M	12 500
Teenager	F	10 500
Baby	M	3 375
Baby	F	3 370

Leave blank

(a) The energy requirements for the females have been drawn in the bar chart below.



Complete the bar chart by drawing in the values for the energy requirements for the males.

(2)

Leave blank

(b) (i) State which person requires the highest amount of energy each day.

.....

(1)

(ii) State which person requires the lowest amount of energy each day.

.....

(1)

(iii) Suggest and explain why there is a difference between the energy requirements for the two people in (b)(i) and (b)(ii).

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(3)

(c) Using examples from the table, describe how the energy requirements for males differ from that for females.

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(2)

Leave blank

(d) (i) When a woman becomes pregnant she is sometimes told that she is now 'eating for two'. Suggest why this may not be good advice.

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(2)

(ii) Suggest **one** piece of good dietary advice that could be given to a pregnant woman.

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(1)

Q8

(Total 12 marks)

Leave blank

9. An experiment was carried out as part of an investigation on the effects of exercise. Five students took a piece of filter paper, which measured 4 cm by 4 cm. Each piece of paper was weighed and then placed against the forehead of a student using a piece of polythene to hold it. The paper was left for five minutes, while the student was sitting still, and then reweighed.

The filter paper was then replaced on the forehead but during the next five minute period the student ran on the spot. At the end of the second five minutes the paper was reweighed again. The results are shown in the table below.

Student	Mass of filter paper in g		
	At start	After contact with forehead when sitting	After contact with forehead during exercise
1	0.16	0.17	0.19
2	0.13	0.16	0.21
3	0.16	0.18	0.22
4	0.13	0.15	0.20
5	0.17	0.19	0.23
Mean (Average)		0.17	0.21

(a) (i) Complete the table by calculating the mean value for the mass of paper at the start. Show your working.

(2)

(ii) Explain why the mass of the paper increased as a result of the paper being held on the forehead.

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(2)

Leave blank

(iii) Use the data to explain the effect of exercise on the change in mass of the paper.

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(4)

(b) Suggest why five students were used to perform the experiment rather than taking the results from just one student.

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(2)

Q9

(Total 10 marks)

TOTAL FOR PAPER: 100 MARKS

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