



General Certificate of Secondary Education
2009–2010

Centre Number

71

Candidate Number

Science: Single Award (Modular)

Staying Alive
Module 1
Higher Tier

[GSC12]



WEDNESDAY 24 FEBRUARY 2010, MORNING

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all six** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's
use only

Question Number	Marks
1	
2	
3	
4	
5	
6	

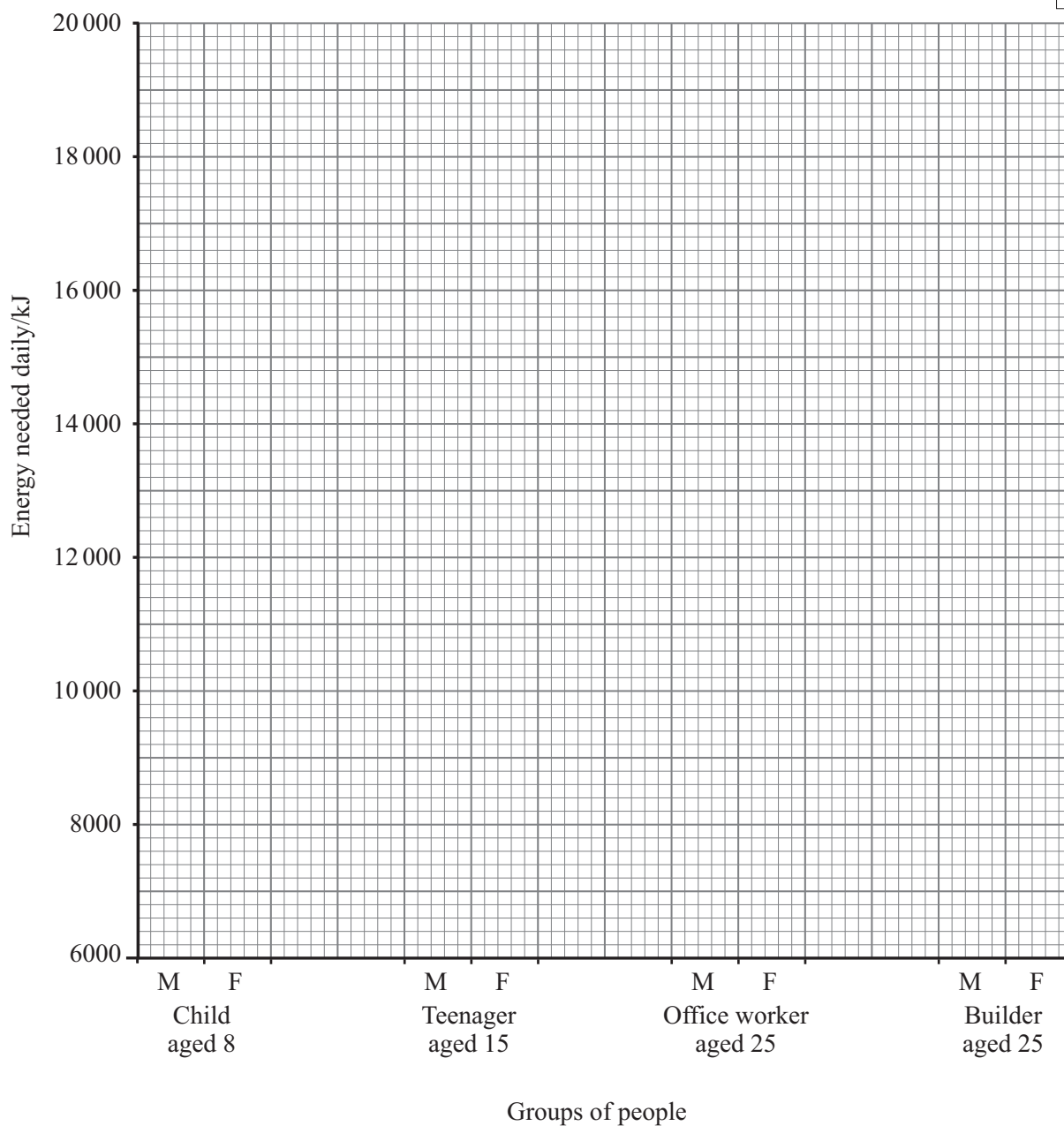
Total
Marks

- 1 (a) The table below shows the daily amount of energy needed by different groups of people.

Groups of people	Energy needed daily/kJ	
	Male	Female
Child aged 8	8800	8800
Teenager aged 15	12 600	9600
Office worker aged 25	11 600	9500
Builder aged 25	20 000	12 600

Examiner Only	
Marks	Remark

- (i) Draw a **bar chart** of these energy needs on the grid below. [2]



- 2 (a) In a TV advertisement for Flora Buttery a chef said “most people prefer the taste of Flora to that of Lurpak Lighter Spreadable”.



© “Flora and Flora Buttery are trade marks of Unilever Plc. Image reproduced with their kind permission”



© Arla Foods Ltd

Small print at the bottom of the screen then states:

“Out of 200 people surveyed, 48% preferred Flora Buttery, 45% Lurpak Lighter Spreadable, 7% had no preference”.

- (i) Calculate how many more people preferred Flora to Lurpak. Show your working out.

_____ [2]

The Advertising Standards Agency (ASA) concluded that the advertisement was “likely to mislead”.

- (ii) Use this information to suggest **two** reasons why the ASA reached this conclusion.

_____ [2]

Examiner Only	
Marks	Remark

(iii) Give **one** reason why people with heart disease should use these products sparingly.

[1]

(b) Another common disease in the UK is diabetes Type 2.

(i) Give **two** reasons why the number of young people with diabetes Type 2 is increasing.

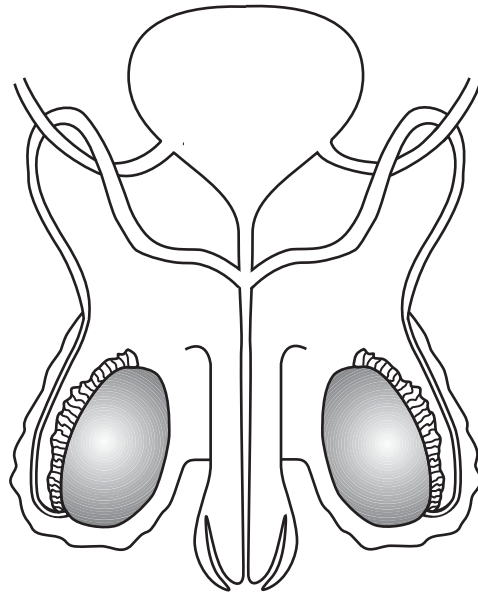
[2]

(ii) Apart from heart disease, give **one** long-term medical problem (complication) associated with untreated or poorly controlled diabetes.

[1]

Examiner Only	
Marks	Remark

- 3 Below is a diagram of the male reproductive system, but it does not show the prostate gland.



© Illustrated Biology by BS Beckett, published by Oxford University Press, 1978, ISBN 0199140448

- (a) (i) Draw the prostate gland on the diagram above. [1]

- (ii) Fully describe the function of the prostate gland.

_____ [2]

- (iii) Suggest a reason why males have two testes.

_____ [1]

- (b) Name and describe the procedure involved during a male sterilisation operation.

_____ [2]

- (c) Suggest **two** reasons why some people do not approve of using contraceptive methods.

_____ [2]

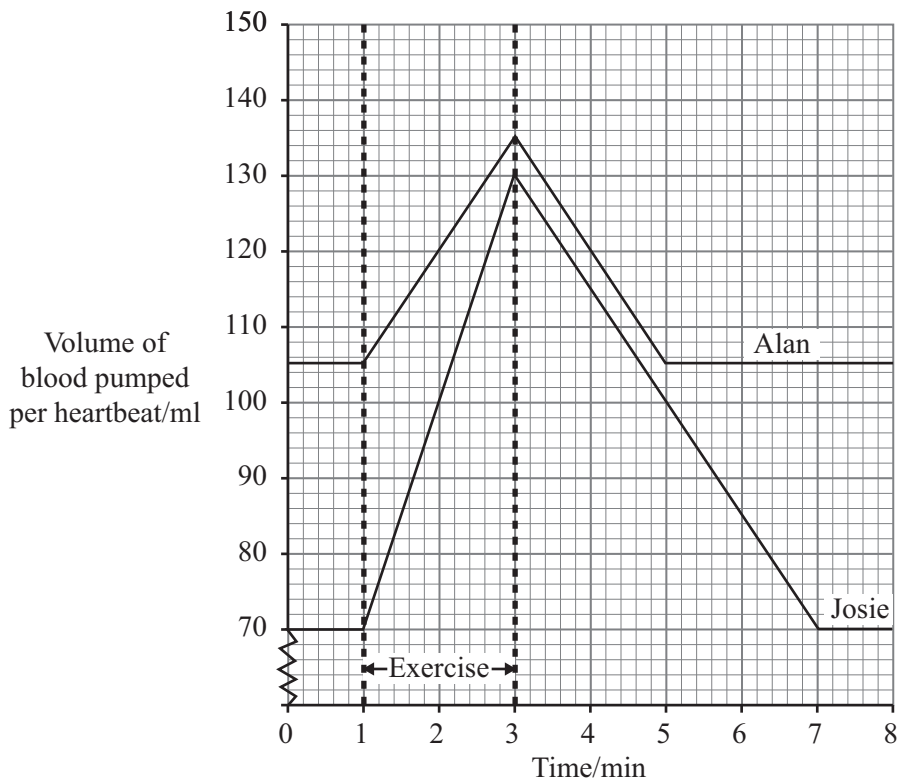
Examiner Only

Marks Remark

4 (a) Explain fully why regular exercise makes the heart stronger.

[3]

(b) The graph below compares the volume of blood pumped per heartbeat for Alan and Josie over a period of eight minutes.



(i) Calculate the volume of **extra** blood that was pumped per heartbeat by Josie at the end of the exercise.

_____ ml [1]

(ii) State **two** pieces of evidence shown in the graph which suggests that Alan has a stronger heart than Josie.

[2]

Examiner Only	
Marks	Remark

- 5 (a) The relative percentage of the bases in DNA of different organisms are shown in the table below.

Organism	Percentage of bases			
	A	G	T	C
Chicken	28	22	28	22
Rat	29	21	29	21
Human	30	20	30	20
Octopus		19	31	

- (i) What pattern for the percentage of bases is shown by the first three organisms?

_____ [1]

- (ii) Complete the table by adding in the percentages of base A and base C in octopus DNA. [1]

- (iii) Name the structures that DNA is packaged into in the nucleus.

_____ [1]

- (iv) How do the DNA 'packages' in a sperm cell differ from other body cells?

_____ [1]

- (b) Two of the different lines of evidence that led to scientists identifying the structure of DNA relied on the processes of X-ray diffraction and modelling. For each process, state the names of the scientist(s) using them and describe the evidence they produced.

X-ray diffraction _____

Modelling _____

_____ [4]

Examiner Only

Marks Remark

6 (a) Photosynthesis is a key process which is essential for life.

(i) Explain fully the above statement.

_____ [3]

(ii) Name two raw materials needed for photosynthesis and state where the plant obtains each one from.

_____ [2]

(b) Describe the main differences between the processes of photosynthesis and respiration.

_____ [2]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only	
Marks	Remark

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