Food, Digestion and Respiration Year 8 Mini Test

38 minutes

59 marks

Q1. The table shows the recommended daily intake of energy and some of the nutrients needed by different groups of people.

group of people	energy, in kj	nutrients				
		protein, in g	carbohydrate, in g	fat, in g	minerals, in g	
					calcium	iron
male 15 - 18	11510	55.2	360	109	1000	11.3
female 15 - 18	8830	45.0	276	84	800	14.8
male 19 - 50	10600	55.5	331	100	700	8.7
female 19 - 50	8100	45.0	253	77	700	14.8
pregnant female	8900	81.0	278	84	700	14.8

(a) (i) Explain why two 16 year-old males of the same weight might need different amounts of energy.

.....

.....

1 mark

(ii) Which **two** types of nutrient provide most of the energy in our diet?

1. .....

2. .....

2 marks

(b) (i) Calculate the difference in the recommended daily intake of calcium for a 15 year-old male and a 30 year-old male.

..... mg

1 mark

(ii) Calcium is needed for healthy bones. Explain the difference in the amount of calcium needed each day by a 15 year-old male and a 30 year-old male.

.....

.....

1 mark

(c) Look at the table. Explain the difference in the amount of protein needed by a 25 year-old pregnant female and a 25 year-old female who is **not** pregnant.

.....

.....

1 mark

(d) Iron is needed to make blood.
Explain why a 15 year-old female might need more iron than a 15 year-old male.

.....

.....

1 mark
Maximum 7 marks

Q2. The information below shows the recommended daily amounts of nutrients and energy for four different people.

person	protein	calcium	iron	energy
15–year–old girl	45 g	800 mg	15 mg	8 830 kJ
15–year–old boy	55 g	1000 mg	11 mg	11 510 kJ
computer operator	56 g	700 mg	9 mg	10 700 kJ
bricklayer	56 g	700 mg	9 mg	13 000 kJ

Information taken from Report 41 of the Department of Health - Dietary Reference Values for Food Energy and Nutrients for the United Kingdom 1991.

(a) Suggest **one** reason why the bricklayer needs a higher energy diet than the computer operator.

.....

.....

1 mark

(b) Explain why the 15-year-olds need more calcium than the adults.

.....

.....

.....

2 marks

(c) Iron is needed to make red blood cells. Why do 15-year-old girls need more iron than 15-year-old boys?

.....

.....

1 mark

(d) A balanced diet contains a variety of foods which provide nutrients and energy.

The drawings show four different foods. Choose from these to answer the questions which follow.

carrot

milk

vegetable oil

chicken

Which of these foods is the best source of:

fibre? .....

calcium? .....

protein? .....

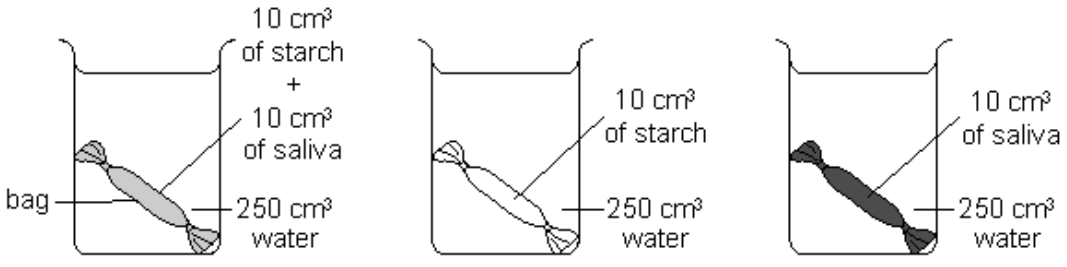
3 marks
Maximum 7 marks

Q3. Sally investigated how the human body digests and absorbs starch.

She used saliva to digest the starch.

To model digestion she used special bags made from a semi-permeable membrane. These bags have lots of very small holes.

Sally sets up the equipment as shown below. There is one special bag in each beaker.



beaker A **beaker B** **beaker C**

She keeps the water in the beakers at 37ºC.
After 20 minutes, Sally tested the contents of each beaker and bag for starch and sugar.
The table below shows Sally's results.

	Was starch found in the bag?	Was sugar found in the bag?	Was starch found in the water?	Was sugar found in the water?
beaker A	✓	✓	✗	✓
beaker B	✓	✗	✗	✗
beaker C	✗	✗	✗	✗

(a) Suggest why Sally kept the water at 37ºC.

.....

1 mark

(b) (i) Explain why sugar was found in the bag in beaker A.

.....

1 mark

(ii) Starch was **not** found in the **water** outside the bag in any beaker.
Suggest why.

.....

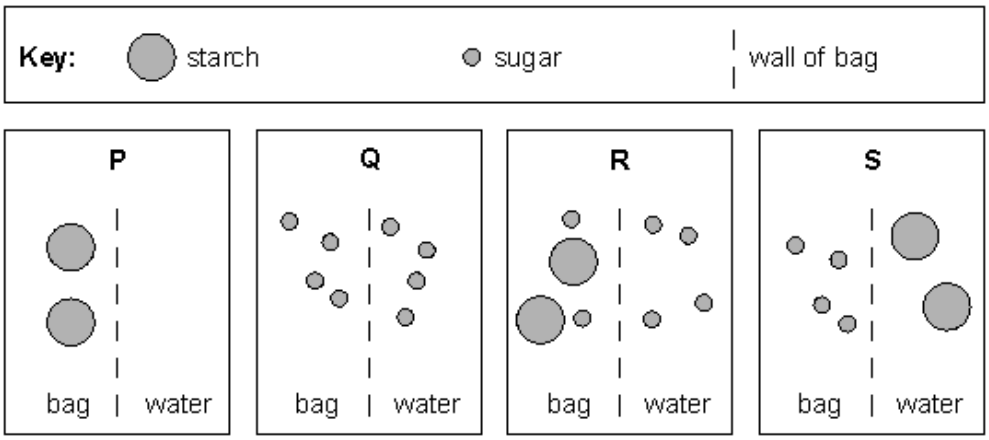
1 mark

(c) Why did Sally set up beaker C? Tick the correct box.

for a fair test	☐	for accuracy	☐
for reliability	☐	for a control	☐

1 mark

(d) Sally used diagrams to show what happened in her investigation.



Use the diagrams above to answer the following questions.

(i) Which diagram shows the **results** of beaker **B**? Write the letter.

.....

1 mark

(ii) Which diagram shows the **results** of beaker **A**? Write the letter.

.....

1 mark

(e) What does saliva contain that causes starch to change in beaker A?

.....

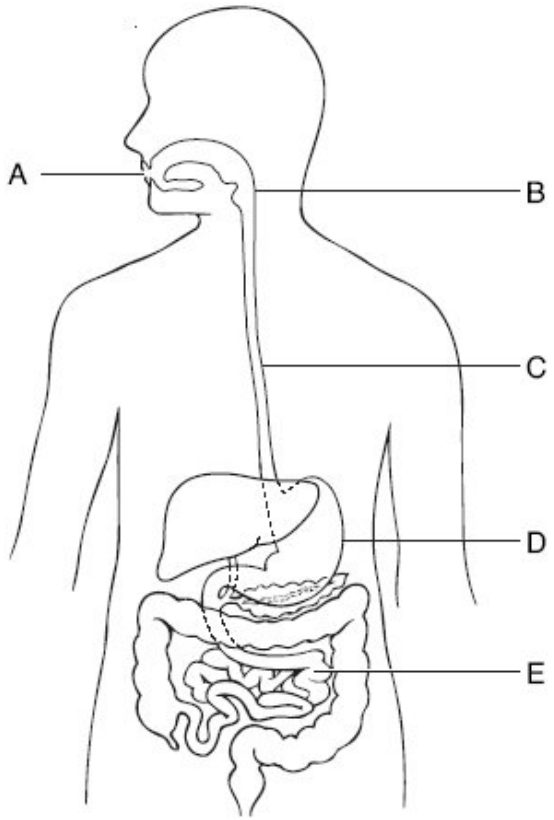
1 mark

(f) Sally chewed a piece of bread for 5 minutes without swallowing.
What would she notice about the taste of the bread after chewing for 5 minutes?
Use Sally's results to help you.

.....

1 mark
maximum 8 marks

Q4. The diagram below shows the digestive system.



(a) (i) Give the letter which labels the stomach.

.....

1 mark

(ii) Give the letter which labels the small intestine.

.....

1 mark

(iii) Glucose is absorbed in the small intestine.

What carries glucose from the intestine to other parts of the body?

.....

1 mark

(b) Some athletes take glucose tablets before a race.

Why do they take glucose?
Tick the correct box.

for growth	☐	for healthy bones and teeth	☐
to prevent disease	☐	to provide energy	☐

1 mark

(c) The table below shows what four people ate for lunch.

name	lunch
Jon	chicken and salad
Nadia	cheeseburger and chips
Clare	lemonade and a jam doughnut
Zak	mushroom soup and an orange

(i) Whose lunch had the most sugar in it?

.....

1 mark

(ii) Whose lunch had the most fat in it?

.....

1 mark

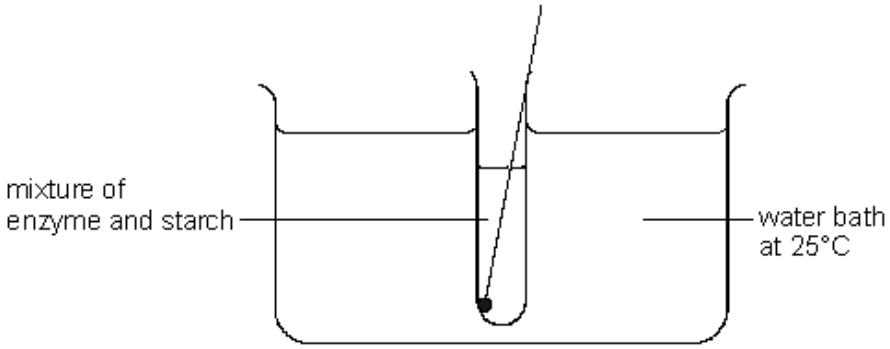
(iii) Eating too much fat is bad for you.
Give **one** reason for this.

.....

.....

1 mark
maximum 7 marks

Q5. Sadie and Tom carried out an experiment to investigate the digestion of starch using an enzyme called amylase.



(a) Why was the mixture of enzyme and starch kept in a water bath?

.....

1 mark

Sadie and Tom placed drops of iodine solution on a white tile. They know that starch will turn the iodine solution from brown to dark blue.

Every 30 seconds they added a drop of the mixture of enzyme and starch to a drop of iodine solution on the tile. At first the drops turned blue, but after 240 s they stayed brown.

(b) Why did the mixture stop turning the drops of iodine solution blue after 240 s?

.....

.....

1 mark

(c) They then carried out the experiment with the water bath at 35°C. This time, the drops stopped turning blue after 120 s. How does raising the temperature from 25°C to 35°C affect the digestion of starch?

.....

.....

1 mark

(d) Sadie and Tom want to compare the experiment at 35°C with the results from the experiment at 25°C. Describe what they need to do to make this a fair comparison.

.....

.....

1 mark

(e) A balanced diet includes all of the substances in the following list.

Starch fat fibre minerals protein vitamins

(i) Give the names of the **two** substances in the list which are absorbed into the blood without being digested.

1. .....

2. .....

1 mark

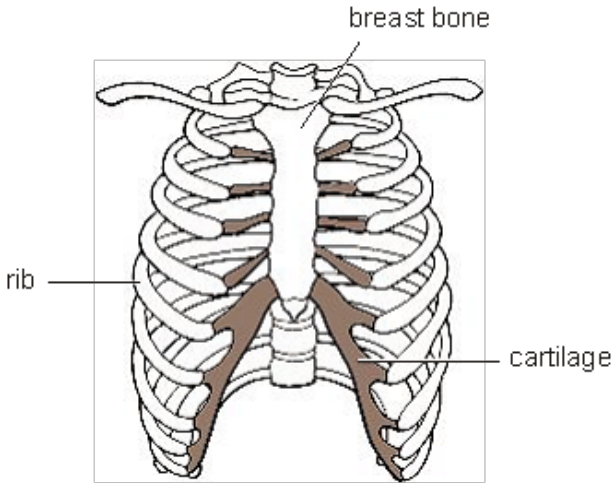
(ii) Which substance in the list passes through the body without being digested?

.....

1 mark

Maximum 6 marks

Q6. The drawing below shows the human rib cage.



(a) The rib cage protects organs in the chest.

Give the names of **two** organs in the chest.

1. .....

2. .....

2 marks

(b) The ribs are attached to the breast bone by cartilage which bends easily.
This lets the space in the chest get bigger.

Why is it important that the space can get bigger?

.....

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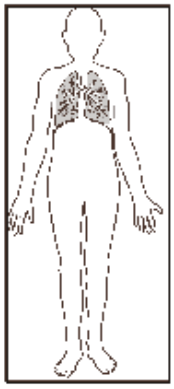
1 mark

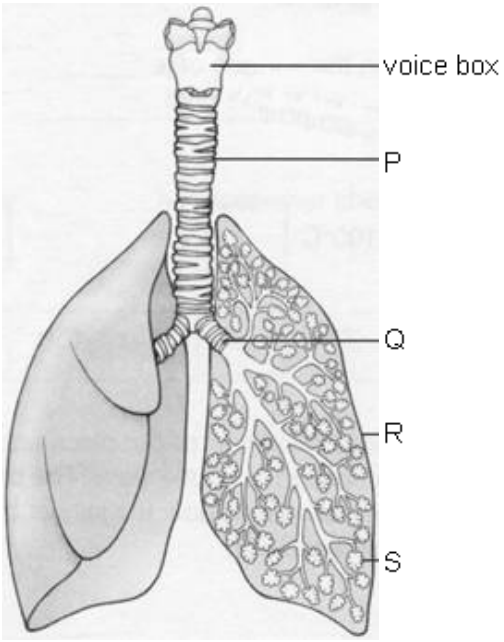
(c) The drawings below show parts of three different organ systems.

Draw a line from each organ system to its function.
Draw only **three** lines.

organ system	function
	digestion of food
	reproduction
	control of the body
	taking in oxygen from the air
	movement of the body

3 marks
maximum 6 marks

Q7. The diagram below shows part of the respiratory system.



(a) From the diagram, give the letters which label:

(i) the trachea; …….

1 mark

(ii) alveoli. …….

1 mark

(b) (i) Which gas passes into the blood from the alveoli?

……

1 mark

(ii) Which gas passes out of the blood into the alveoli?

……

1 mark

(c) The walls of the capillaries and the alveoli are very thin.
Why do they need to be thin?

……

……

1 mark

(d) There are millions of alveoli in the lungs. They provide a very large surface area. Why is a large surface area necessary?

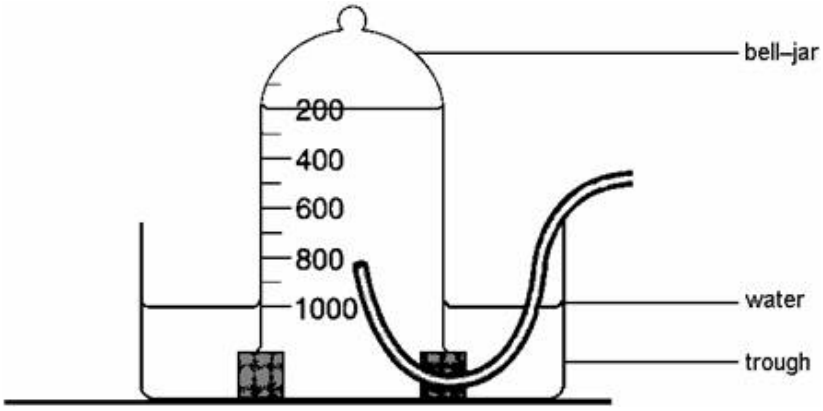
……

……

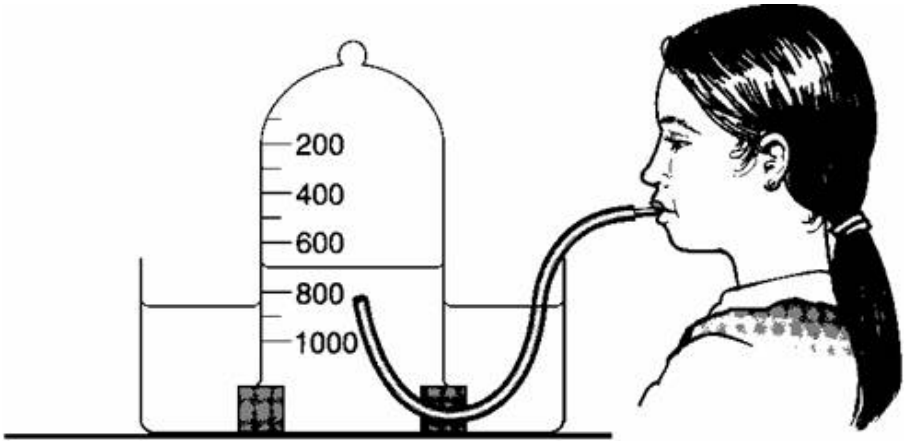
1 mark
Maximum 6 marks

Q8. (a) Jasmine was trying to find out how much air she breathed out in one breath. She poured water into a bell-jar and placed it upside down in a trough of water. The bell-jar had a scale marked in cm^3.

before Jasmine breathed into the bell-jar



after Jasmine breathed into the bell-jar



(i) How much air did Jasmine breathe out?

..... cm^3

1 mark

(ii) Air contains carbon dioxide, nitrogen, noble gases, oxygen and water vapour.

Give **three differences** between the composition of the air Jasmine breathed in and the air she breathed out.

Compared to the air she breathed in, the air she breathed out contained:

1. .....

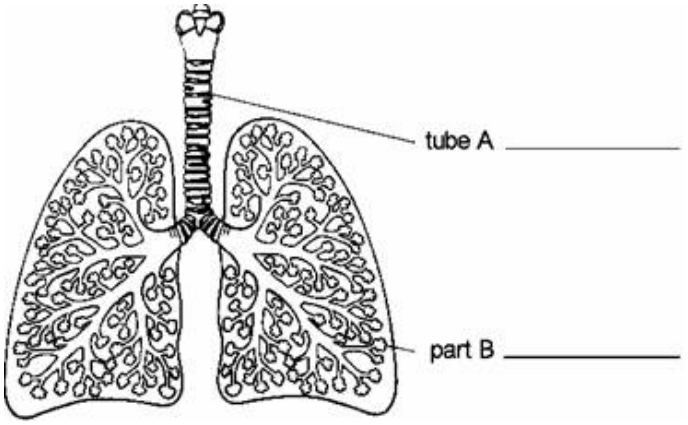
2. .....

3. .....

3 marks

(b) In the diagram below, tube A connects the lungs to the mouth. Part B is a part of the lung where gas exchange takes place.

(i) On the diagram, write the names of tube A and part B.



2 marks

(ii) In the wall of tube A there are 'rings' of a stiff material called cartilage. Suggest **one** function of the 'rings' of cartilage.

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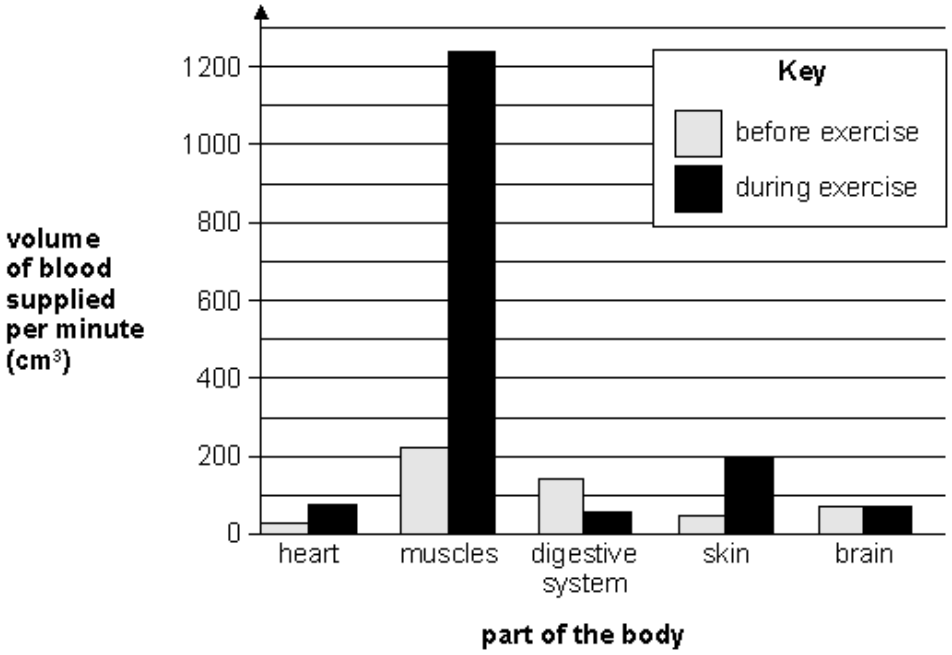
1 mark

Maximum 7 marks

Q9. When people exercise, the volume of blood per minute needed to supply different parts of the body changes.

This is shown in the bar chart below.



(a) Explain why muscles need **more** blood during exercise. Give **three** reasons.

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.....

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3 marks

(b) Look at the bar chart.
Suggest why you should not go for a long run just after eating a meal.

.....

.....

1 mark

(c) Why is it important that the blood supply to the brain stays constant?

.....

.....

1 mark
maximum 5 marks