testbase

NutritionDigestion

Name: _____

Class: _____

Date: _____

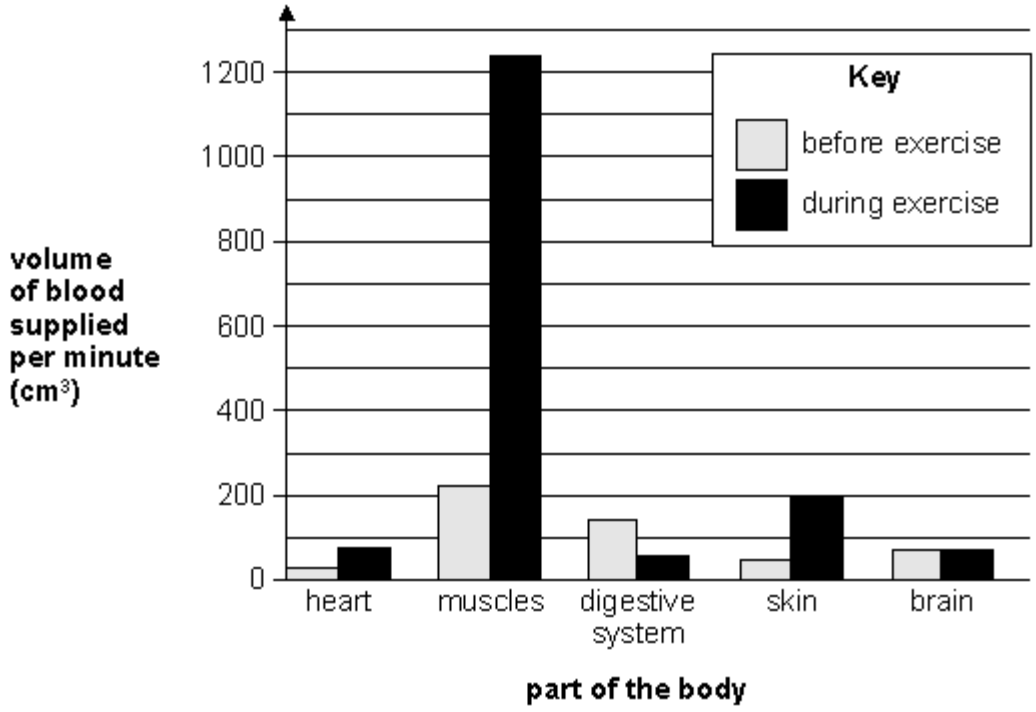
Time: **60 minutes**

Marks: **86 marks**

Comments:

1 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.

.....

.....

.....

.....

.....

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?

.....

.....

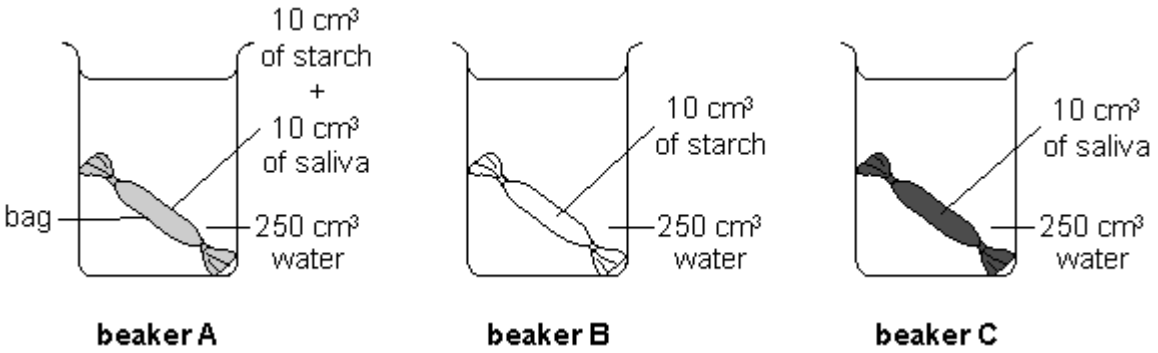
1 mark
maximum 5 marks

2 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.

.....

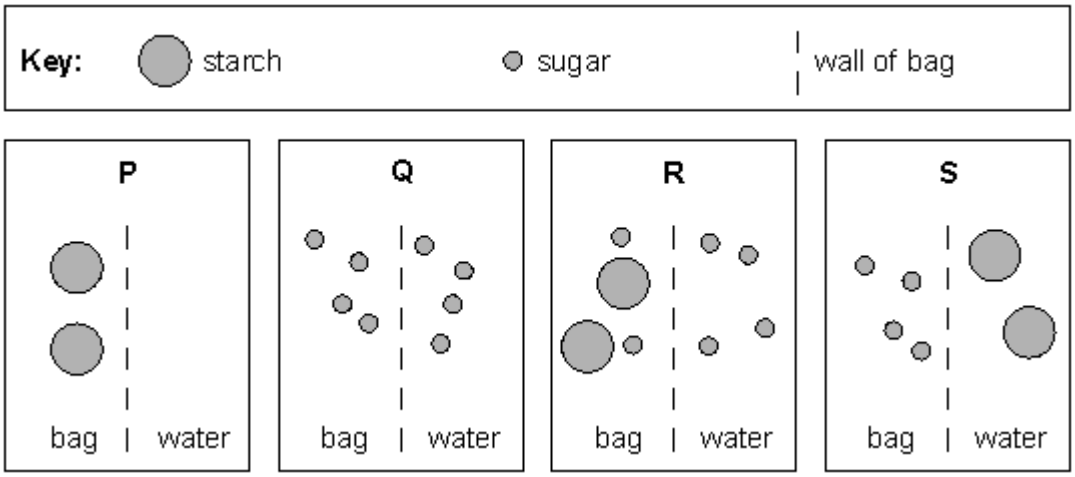
1 mark

(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

3 The table shows the mass of water, fat, fibre and vitamin C in 100 g of potato cooked in three different ways.

	water, in g	**fat, in g**	**fibre, in g**	**vitamin C, in mg**
100 g of chips	57	7	2	9
100 g of boiled, peeled potato	80	hardly any	1	6
100 g of potato baked in its skin	63	hardly any	3	14

(a) Use information from the table to help you fill the gaps in the following sentences.

(i) Chips are crisper than boiled potatoes because chips contain **less**

.....

1 mark

(ii) Most of the fibre in a baked potato is in the ..... of the potato.

1 mark

(b) Use the information in the table to work out how much vitamin C there is in:

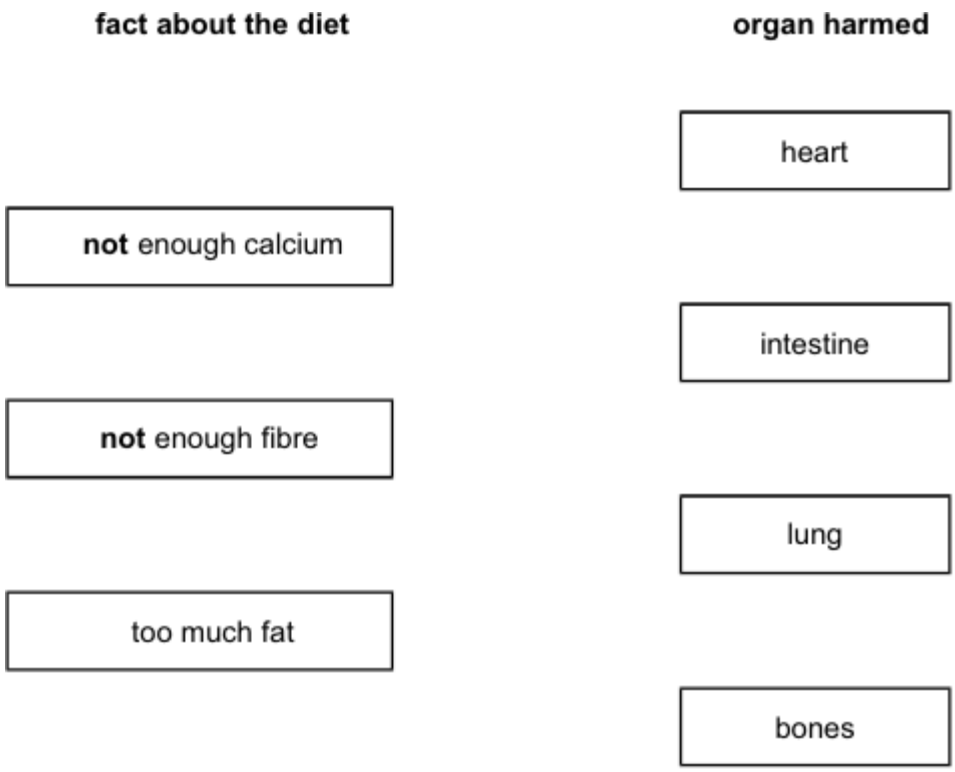
200 g of chips ..... mg;

200 g of potato baked in its skin ..... mg.

1 mark

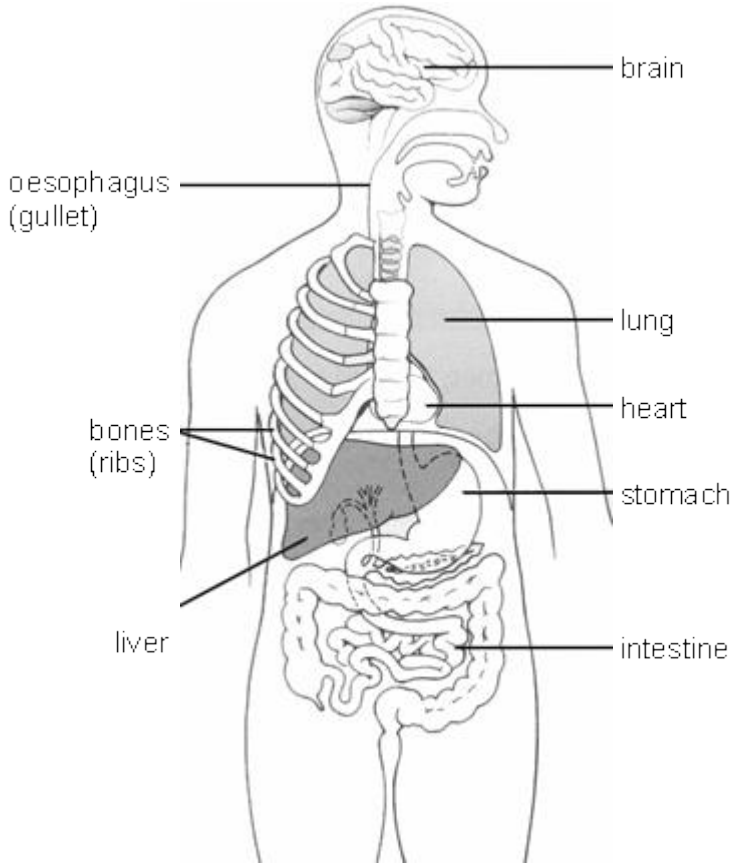
(c) People do **not** always eat a balanced diet.

Draw **one** line from each fact about a person's diet to the organ it harms.
Draw only **three** lines.



3 marks
Maximum 6 marks

4 The diagram shows some of the organs of the human body.



(a) Give the names of **two** labelled parts where food is digested.

..... and .....

1 mark

(b) Why do we need to chew our food and mix it with saliva?

.....

.....

.....

2 marks

(c) (i) Draw **one** line from each bad habit to the organ it harms.

3 marks

(ii) Which organ in the list below can be harmed if we eat too much fat?
Tick the correct box.

brain	☐	heart	☐
lung	☐	ribs	☐

1 mark

Maximum 7 marks

5 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.

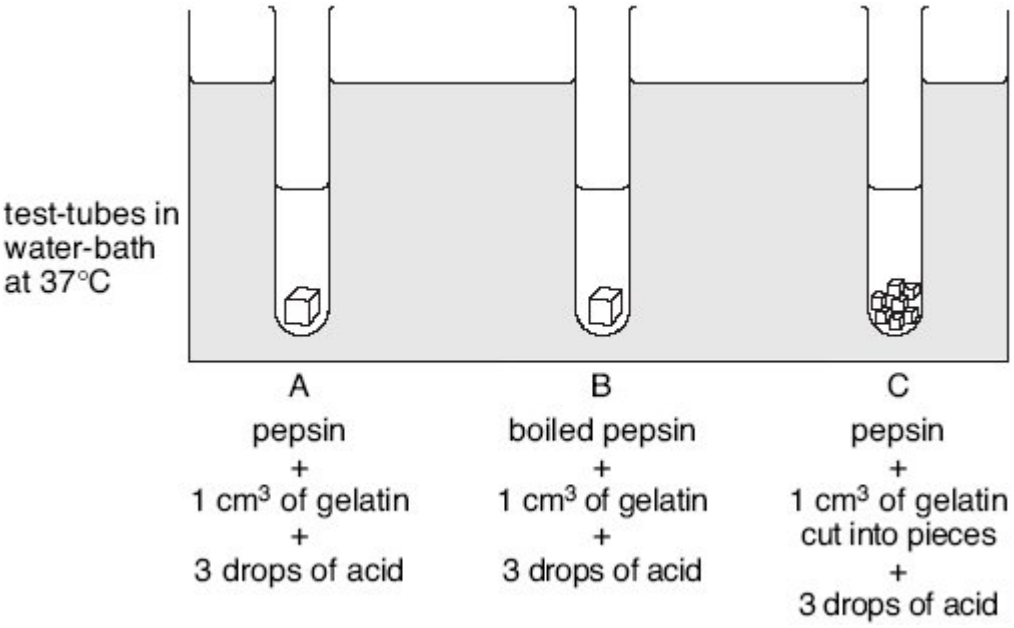
.....

.....

1 mark

Maximum 7 marks

6 Andy investigated the digestion of a protein called gelatin.
He used an enzyme called pepsin from the human stomach, and three cubes of gelatin each 1 cm^3.
He set up the experiment shown below and put the test-tubes in a water-bath at 37°C.
He measured the time for the digestion of the gelatin.



(a) Why did Andy choose a temperature of 37°C for the water-bath?

.....

.....

1 mark

(b) In test-tube C, the cube of gelatin that had been cut into pieces was digested more quickly than the whole cube in test-tube A.

Give the reason for this.

.....

.....

1 mark

(c) The boiled pepsin in test-tube B did **not** digest the gelatin.

Why did boiling this enzyme stop it working?

.....

.....

1 mark

(d) Protein is needed for growth and repair.
The digestion of protein begins in the stomach and is completed in the small intestine.

(i) What are the products of the digestion of protein?
Tick the correct box.

amino acids	☐	energy	☐
sugars	☐	vitamins	☐

1 mark

(ii) Why is it necessary to digest protein before it can be used for growth and repair?

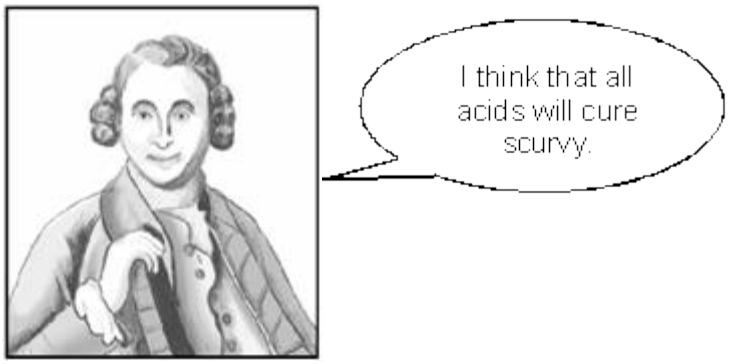
.....

.....

1 mark

maximum 5 marks

7 Sailors used to suffer from an illness called scurvy caused by a poor diet on long journeys. James Lind was a doctor who tested treatments for scurvy. He predicted that **all acids cure scurvy**.



He gave 6 pairs of sailors with scurvy exactly the same meals but he also gave each pair a different addition to their diet.

pair of sailors	addition to their diet	effect after one week
1	some apple cider	beginning to recover
2	25 drops of very dilute sulphuric acid to gargle with*	still had scurvy
3	2 teaspoons of vinegar	still had scurvy
4	half a pint of sea water*	still had scurvy
5	2 oranges and 1 lemon	recovered
6	herbs and spices and acidified barley water	still had scurvy

(a) Does the evidence in the table support the prediction that all acids cure scurvy? Tick the correct box.

☐ yes ☐ no

Use the table to explain your answer.

.....

.....

1 mark

(*) DANGER! DO NOT TRY THIS.

(b) (i) Give the **one** factor James Lind **changed** in this experiment.
(This is called the independent variable.)

.....

1 mark

(ii) Give the factor James Lind **examined** in this experiment.
(This is called the dependent variable.)

.....

1 mark

(c) James Lind's evidence suggested that oranges and lemons cured scurvy.

At a later time, other scientists did the following:

- They separated citric acid from the fruit.
- They predicted that citric acid would cure scurvy.
- They tested their prediction by giving pure citric acid as an addition to the diet of sailors with scurvy.
- They found it did **not** cure scurvy.

The scientists had to make a different prediction.

Suggest a new prediction about a cure for scurvy that is consistent with the evidence collected.

.....

.....

1 mark

(d) Explain why it is necessary to investigate the effects of changes in diet over a period of more than one week.

.....

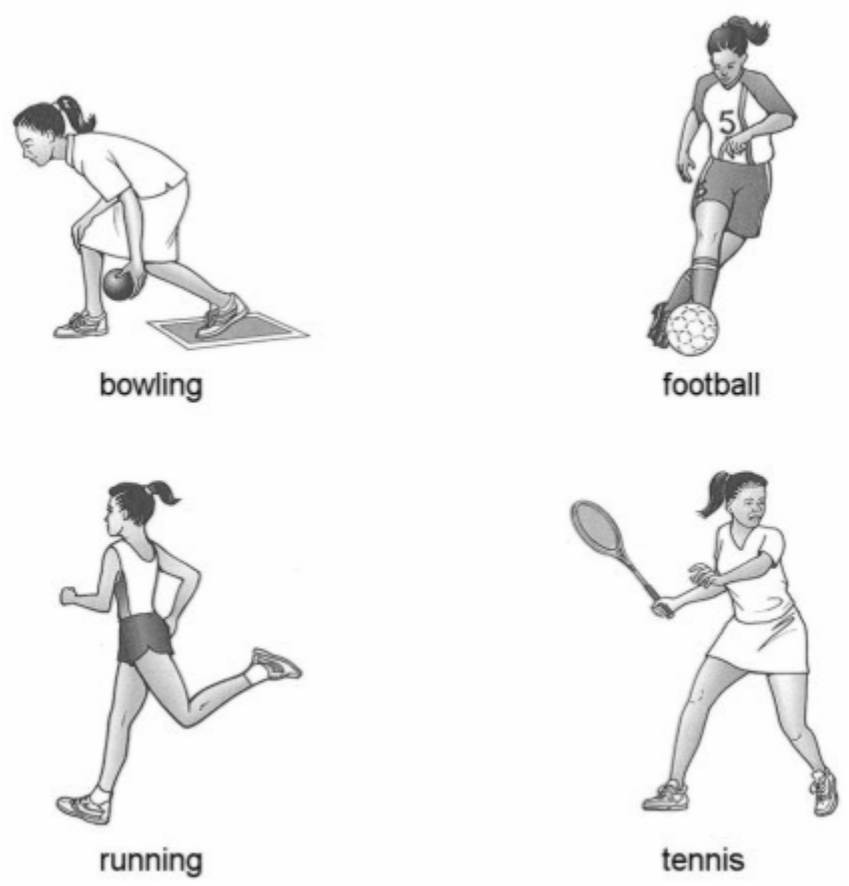
.....

.....

.....

1 mark
Maximum 5 marks

8 The drawings show Sofia taking part in four different sports.



The table below shows the average energy needed for each sport for one hour.

sport	average energy need for one hour (kJ)
bowling	1030
tennis	1760
football	2260
running	3700

(a) (i) Sofia plays football for two hours each week. She also goes bowling for two hours each week.
Explain why Sofia uses up her food reserves more quickly when playing football than when bowling.

.....

.....

1 mark

(ii) Athletes should **not** drink alcohol before taking part in sport.
Give **two** effects of alcohol which would affect an athlete's performance.

1. .....

.....

1 mark

2. .....

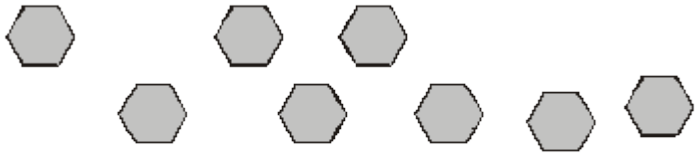
.....

1 mark

(b) Some athletes take glucose tablets before a 100 metre race.
They can also obtain glucose from starch in their diet.
A starch molecule is made up of many glucose molecules joined together as shown below.

part of a molecule of starch

In the digestive system, starch is broken down into glucose:



molecules of glucose

An athlete can obtain energy more quickly by eating glucose rather than starch.
Explain why.

.....

.....

1 mark
maximum 4 marks

9 (a) Pineapple juice contains a substance that speeds up the digestion of protein.

(i) What is the name for substances that speed up digestion?

.....

1 mark

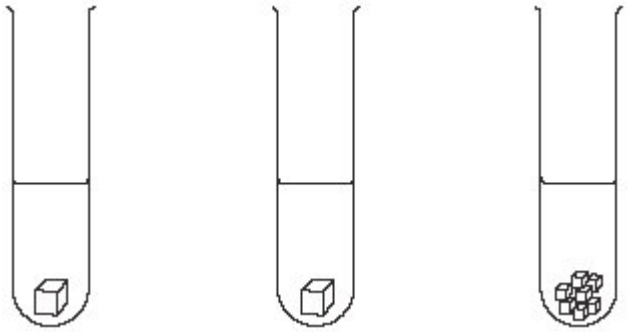
(ii) What happens to a molecule of protein during digestion?

.....

.....

1 mark

(b) Asim did an experiment to investigate the digestion of gelatin.
Gelatin is the protein in jelly.
In test tubes A and B he used one cube of jelly in each.
In test tube C he used one cube of jelly that he had chopped up.



A	**B**	**C**
5 g jelly cube + 15 cm^3 cold water	5 g jelly cube + 15 cm^3 fresh pineapple juice	5 g jelly cube chopped into pieces + 15 cm^3 fresh pineapple juice

He recorded how long it took for the jelly to be digested in each test tube.
The table below shows his results.

test tube	result
A	**not** digested after 2 hours
B	jelly digested in 2 hours
C	jelly digested in 1 hour

(i) What was the purpose of test tube A?

.....

.....

1 mark

(ii) It is helpful to chew your food.
How do the results in test tube C show this?

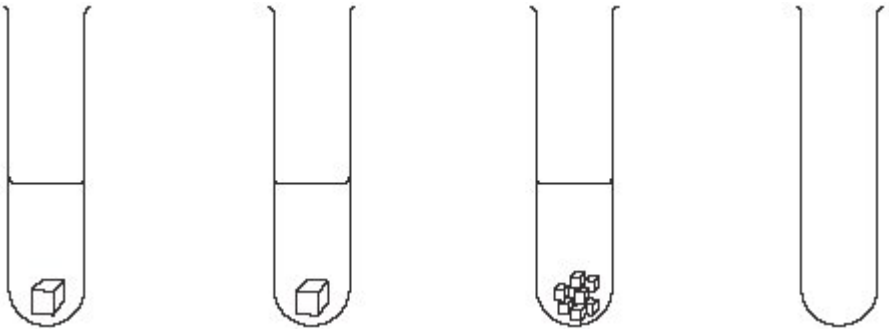
.....

.....

1 mark

(c) The substances that speed up digestion stop working when they have been boiled.

(i) What does Asim need to put in a fourth test tube to test this in his experiment? Label test tube D.
Test tubes A, B and C contain the same as in the first experiment.



A	**B**	**C**	**D**
5 g jelly cube + 15 cm^3 cold water	5 g jelly cube + 15 cm^3 fresh pineapple juice	5 g jelly cube chopped into pieces + 15 cm^3 fresh pineapple	.... + ...

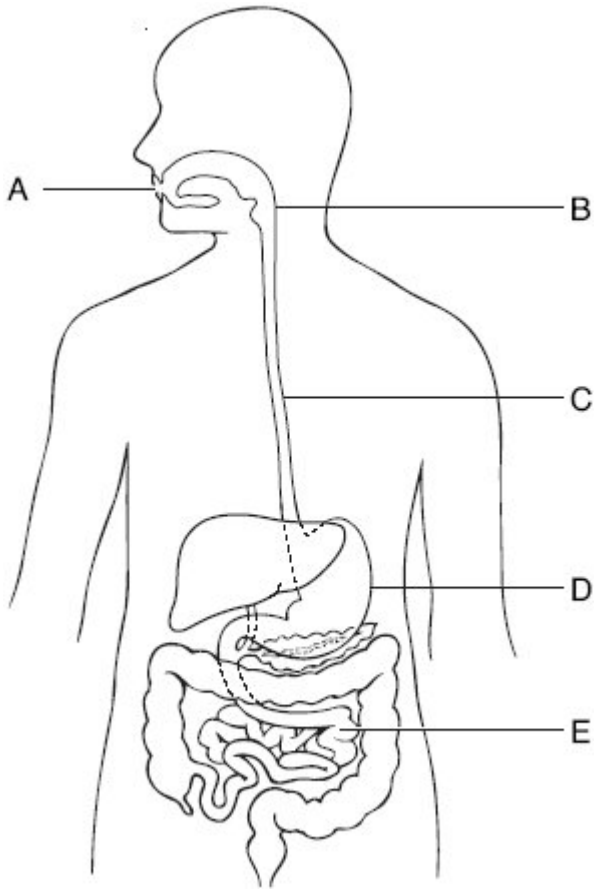
2 marks

(ii) Predict what Asim would observe in test tube D after 2 hours.

.....

1 mark
maximum 7 marks

10 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

11 **Table 1** gives information about 100 g of five different foods.

food	energy per 100 g of food (kJ)	nutrients per 100 g of each food			
		protein (g)	fat (g)	carbohydrate (g)	calcium (mg)
banana	403	1.2	0.3	23.2	6
wholemeal bread	914	9.2	2.5	41.6	54
butter	3031	0.5	81.7	0	15
cheese	1708	22.5	34.4	0.1	720
milk	275	3.2	3.9	4.8	115

table 1

(a) Look at **table 1**.

(i) Which of the four **nutrients**, protein, fat, carbohydrate or calcium, provides most of the energy in the cheese?

.....

(ii) Which of the four **nutrients** provides most of the energy in the wholemeal bread?

.....

(iii) Which of the four **nutrients** is needed for growth and repair?

.....

3 marks

(b) The recommended daily amount of protein for a woman is 45 g.
Look at **table 1**.
How many grams of cheese would provide 45 g of protein?
Tick the correct box.

50 g ☐ 100 g ☐ 150 g ☐ 200 g ☐

1 mark

(c) **Not** all the types of nutrients needed for a balanced diet are shown in **table 1**.

Give the name of **one** of the missing types of nutrient.

.....

1 mark

(d) **Table 2** shows the recommended daily amount of calcium for a person in four stages of the human life cycle.
We need calcium for healthy teeth and bones.

person	recommended daily amount of calcium (mg)
a baby aged 6 months	600
a woman before she is pregnant	500
a pregnant woman	1200
a breast-feeding woman	

table 2

(i) Use information in **table 2** to estimate how much calcium a breast-feeding woman should have each day.

..... mg

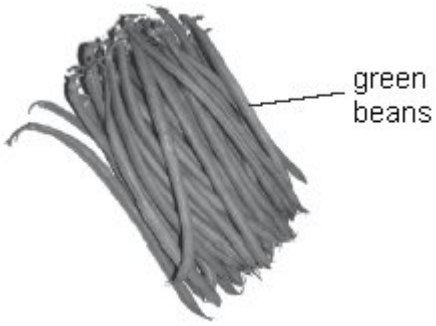
(ii) Explain why she would need this amount of calcium.

.....

.....

2 marks
maximum 7 marks

12 (a) Green beans contain vitamin C.

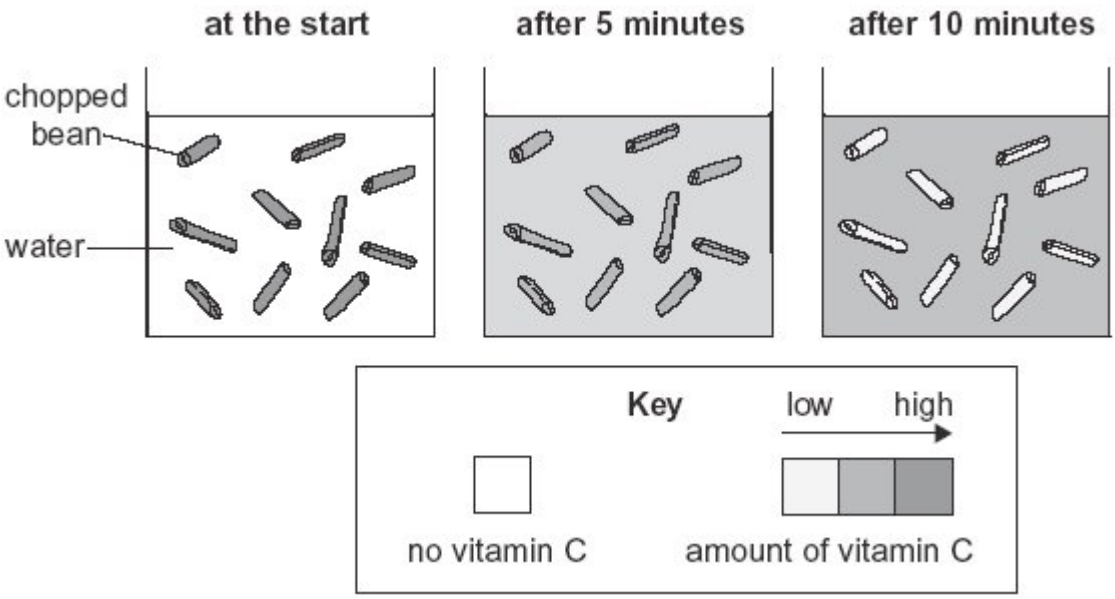


Which other food is a good source of vitamin C?
Tick the correct box.

cheese	chicken	eggs	oranges
☐	☐	☐	☐

1 mark

(b) The amount of vitamin C changes in the beans and in the water as the beans are cooked. The shading shows how it changes.



Use the diagram. How does the **amount of vitamin C** in the beans and in the water change as the beans are cooked? Tick one box in each row.

amount of vitamin C	increases	decreases	stays the same
in the beans			
in the water			

1 mark

(c) Cheese is a source of calcium.

Why do we need calcium?

.....

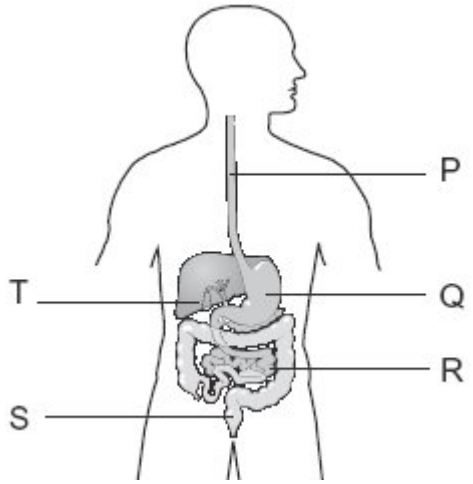
1 mark

(d) Draw a line from each nutrient to a good source of that nutrient in our diet.

nutrient	source of nutrient
starch	lean chicken meat
fat	jam
protein	pasta
sugar	margarine

2 marks

(e) The diagram shows part of the human digestive system.



(i) Write the letter which labels the small intestine.

.....

1 mark

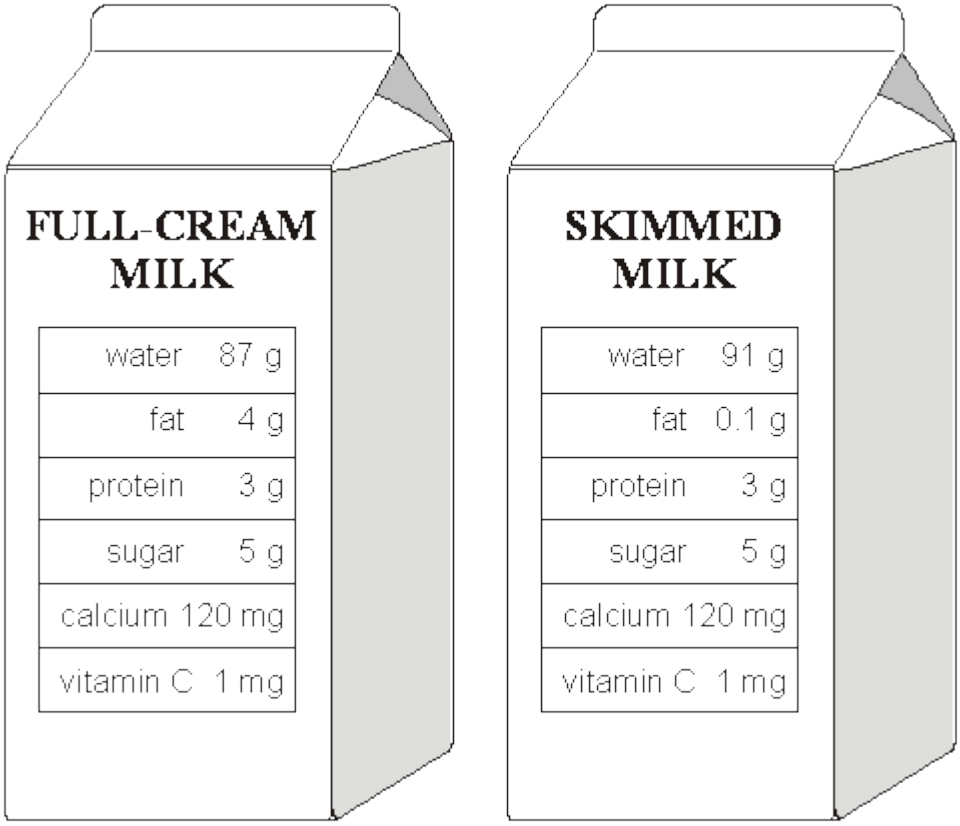
(ii) Write the letter which labels the stomach.

.....

1 mark

maximum 7 marks

13 The drawings show the amounts of different substances in 100 g of full-cream milk and 100 g of skimmed milk.



(a) Use the information in the drawings to complete the sentence.

When skimmed milk is made from full-cream milk, most of the

..... is taken out.

1 mark

(b) (i) Look at the drawings.
Which substance in milk do we need for strong bones and teeth?

.....

1 mark

(ii) How are substances carried around the body?

.....

1 mark

(c) (i) Which animals produce milk to feed their young?
Tick the correct box.

amphibians ☐ birds ☐

mammals ☐ reptiles ☐

1 mark

(ii) A baby fed on its mother's milk gets fewer infections.
What is the reason for this?
Tick the correct box.

The milk contains antibodies. ☐

The milk contains water. ☐

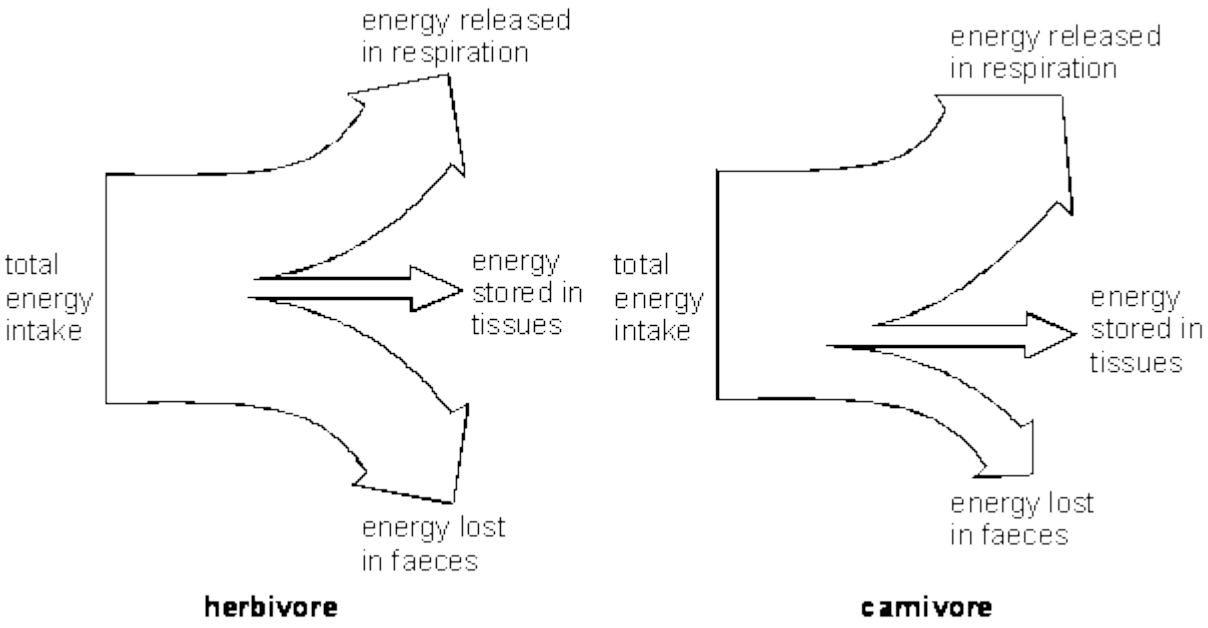
The milk is at body temperature. ☐

The milk is a liquid. ☐

1 mark
maximum 5 marks

14 The diagrams below represent what happens to the energy in the food eaten by a herbivore and a carnivore.

The **width of each pathway** indicates the amount of energy gained or used in a particular way.



(a) (i) What percentage of the total energy, taken in by a herbivore, is stored in its tissues? Use the diagram to help you answer.

..... %

1 mark

(ii) The energy stored in an animal's tissues is passed on to the next animal in the food chain.
Use information in the diagrams above to explain why there are usually no more than four or five stages in a food chain.

.....

.....

1 mark

(b) Respiration takes place in cells, in structures called mitochondria. Why do muscle cells contain large numbers of mitochondria?

.....

.....

1 mark

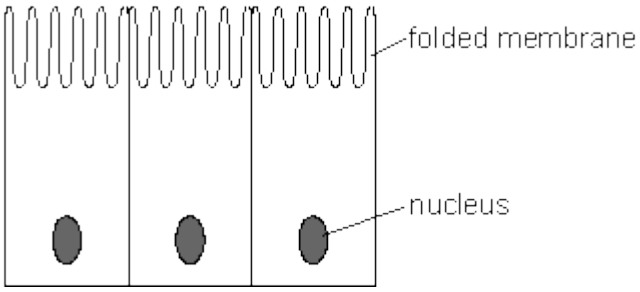
(c) Cows eat plants, but **cannot** digest the cellulose cell walls.
Micro-organisms in the cow's stomach are able to digest the plant cell walls.
Suggest why cows **cannot** digest the cell walls but micro-organisms can.

.....

.....

1 mark

(d) The diagram below shows cells from the inner lining of a mammal's intestine.



The cell membranes in contact with the food are folded.
Explain why it is an advantage that these cells are adapted in this way.

.....

.....

.....

2 marks

Maximum 6 marks

1

(a) any **three** from

- energy is released more quickly
  accept 'more energy is needed'
  'the muscles work harder' is insufficient
- cells respire more quickly
  accept 'respiration is quicker'
  *accept 'muscles **or** they respire more quickly'*
  'blood contains oxygen' is insufficient
- glucose is used up **or** supplied more quickly
  *accept 'more glucose is used **or** needed'*
- oxygen is used up **or** supplied more quickly
  *accept 'more oxygen is used **or** needed'*
- carbon dioxide **or** waste is produced **or** removed more quickly
  *accept 'more carbon dioxide is produced **or** removed'*
- water is removed more quickly
  *accept 'more water is produced **or** removed'*
- blood transports oxygen **or** glucose **or** carbon dioxide **or** waste
  *accept, for **two marks**, 'blood transports more oxygen' **or** 'blood carries carbon dioxide more quickly' as they cover the fourth **or** fifth and seventh marking points*
- heat is produced **or** removed more quickly
  *accept 'more heat is produced **or** removed'*

3 (L7)

(b) any **one** from

- less food is absorbed
  'less blood gets to the digestive system' is insufficient
- the digestive system slows down
  accept 'less food is digested'
  *accept 'it may cause a stitch **or** cramp'*
  accept 'less blood goes to the muscles than is needed'
  *do **not** accept 'no food can be digested **or** absorbed'*

1 (L7)

(c) any **one** from

- the brain **or** brain cells will die if there is less **or** no oxygen **or** glucose

  accept 'otherwise brain damage could occur'

  'the brain will die' is insufficient as it does not explain what the brain needs

- the person might faint **or** feel dizzy **or** lack concentration

- the brain needs a regular supply of oxygen **or** glucose

1 (L7)

[5]

2

(a) • (37 °C is) body temperature

*accept 'so the saliva **or** enzymes would work'*
*accept 'it is a good **or** optimum temperature for digestion'*
'to make it a fair test' is insufficient
'so they are all the same' is insufficient

1 (L5)

(b) (i) • the starch is broken down **or** digested

'there is a reaction between starch and saliva' is insufficient

1 (L6)

(ii) any **one** from

- starch could not pass through the bag

  accept 'starch could not get through the holes'

  'the bag is semi-permeable' is insufficient

- starch is too big

  'the bag holds it in' is insufficient

1 (L6)

(c) • for a control ✓

if more than one box is ticked, award no mark

1 (L6)

(d) (i) • P

if more than one letter is given, award no mark

1 (L6)

(ii) • R

if more than one letter is given, award no mark

1 (L6)

(e) • enzymes

*accept 'amylase' **or** 'carbohydrase'*

1 (L6)

(f) any **one** from

- sweeter **or** sugary

  *accept 'sugar' **or** 'sweet'*

- it tastes of sugar (L6)

1

[8]

3

(a) (i) water

1 (L3)

(ii) skin **or** peel

1 (L3)

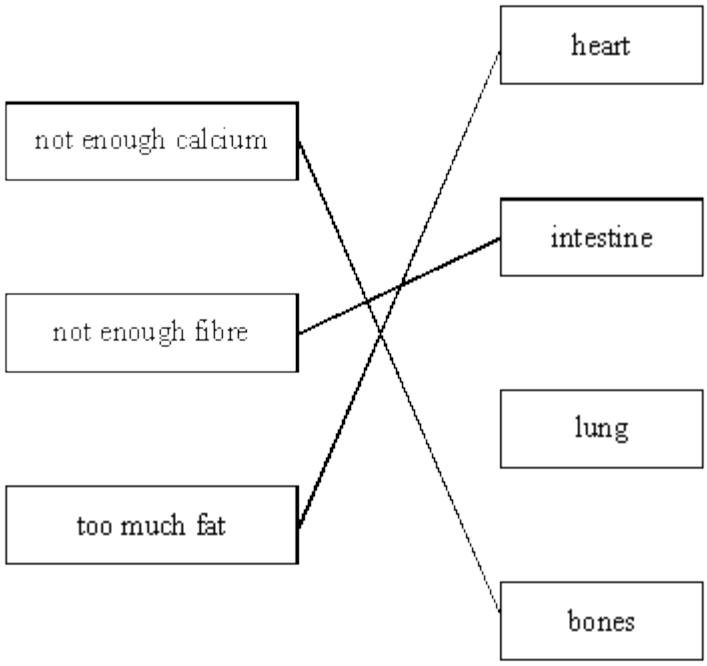
(b) 18
28

answers must be in the correct order

***both** answers are required for the mark*

1 (L4)

(c)



if more than one line is drawn from any fact about the diet, award no mark for that fact

3 (L4)

[6]

4

(a) stomach *and* intestine

answers may be in either order

both answers are required for the mark
*accept 'oesophagus' **or** 'gullet'*

1 (L4)

(b) any **two** from

- to make it easy to swallow

  accept 'so that it will go down easily'

  accept 'to stop you choking'

- to digest food or break it down

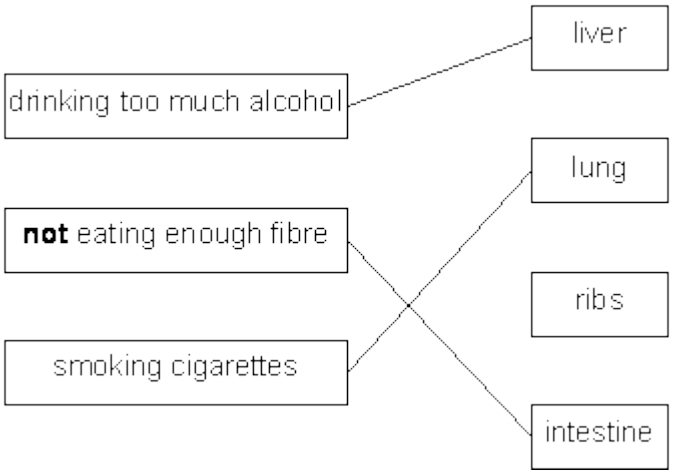
  accept 'to break it into smaller pieces'

- to soften the food

  accept 'it dissolves it'

2 (L4)

(c) (i)



award one mark for each correct line
if more than one line is drawn from any habit, award no mark for that habit

3 (L3)

(ii) heart ✓

if more than one box is ticked, award no mark

1 (L4)

[7]

5

(a) (i) one is more active

accept 'one does sport ***or*** *plays football'*

accept 'they have different metabolic rates'

accept 'one works harder ***or*** *does more work'*

1 (L5)

(ii) carbohydrates

answers may be in either order

accept a named carbohydrate, eg 'sugar' ***or*** *'glucose'* ***or*** *'starch'*

1 (L5)

fats

1 (L5)

(b) (i) 300

1 (L5)

(ii) any **one** from

- a boy's bones **or** teeth are still growing
  *accept '15 year-old male is growing **or** still developing'*
- by 30 the bones have already developed
  accept '30 year-old male has stopped growing'

1 (L5)

(c) any **one** from

- a pregnant female supplies the baby with protein
  accept 'she supplies the baby'
- a pregnant female needs protein for herself and the baby
  accept 'she needs it for herself and the baby'
- the baby needs protein

1 (L6)

(d) any **one** from

- a 15 year-old female menstruates
- a 15 year-old female has periods

1 (L6)

[7]

6 (a) any **one** from

- it is the temperature of the human body **or** the stomach
- the enzyme **or** pepsin works best at that temperature

1 (L6)

(b) there was a larger surface for the enzyme to act on
accept 'the enzyme came into contact with more of the gelatin'
*accept 'the surface **or** area was bigger'*
'because the gelatin had been chopped up' is insufficient

1 (L7)

(c) it **or** the enzyme was destroyed **or** denatured
*do **not** accept 'the enzyme was killed'*

1 (L7)

(d) (i) amino acids ✓

if more than one box is ticked, award no mark

1 (L7)

(ii) any **one** from

- proteins cannot be absorbed
- proteins are too big to pass through the lining of the intestine **or** blood vessels

  *accept 'so proteins **or** they can be absorbed'*
- amino acids can be absorbed
- amino acids can pass through the wall of the intestine **or** blood vessels
- amino acids are small enough to be absorbed
- to make them soluble

  *'they need to be digested **or** broken down' is insufficient*

1 (L7)

[5]

7 (a) No ✓

if more than one box is ticked, award no mark

and any one from **both** the answer and the explanation are required for the mark

- sulphuric acid did not cure scurvy

  accept 'some acids did not cure scurvy'
- not all the sailors recovered

  accept 'only pair 5 totally recovered'
- only two pairs recovered
- only those that had fruit- related additions recovered
- some with acid failed to recover
- a week is not long enough to show the effect

  accept 'a week is not long enough'

  'only those who received vitamin C recovered' is insufficient

1 (L5)

(b) (i) any **one** from

- addition to their diet
  *do **not** accept 'type of food **or** drink'*
- food **or** drink supplements
  *do **not** accept 'kind of meal'*
- type of acid
  accept 'the acid'
  accept 'amount of acid'
  *do **not** accept conclusions such as '4 out of 6 pairs of sailors had scurvy'*

1 (L5)

(ii) any **one** from

- whether they recovered
- return to health
- recovery from scurvy
  accept 'scurvy is cured'
- effect after one week
  *do **not** accept 'time to recover'*

1 (L5)

(c) any **one** from

- there must be a different substance
  or something present in fruits that cures scurvy
  accept 'fruits will cure scurvy'
  accept 'vitamin in the fruit would cure scurvy'
  accept 'vitamin C will cure scurvy'
  accept any named vitamin for vitamin C
  accept 'vitamins would have an effect'
  'the acids in oranges and lemons cure scurvy' is insufficient
  'oranges and lemons will cure scurvy' is insufficient

1 (L6)

(d) any **one** from

- effects due to diet may take more than a week to reveal themselves

  accept 'one week is too short'
  ***or** 'you need to see long term effects'*

- the body takes time to adjust to the diet
- time is needed for the results to reveal themselves
- the effects do not take place before a week
- the longer the time the more reliable the results

  accept 'oranges or lemons might be a short term cure'

1 (L6)

[5]

8 (a) (i) football requires more energy than bowling

accept 'football is more energetic'
accept 'you run more in football'
accept 'she is using up more kJ'
accept 'playing football uses 2260 kJ/hr and bowling uses 1030 kJ/hr'
*do **not** accept 'football is energetic'*

1 (L7)

(ii) any **two** from

- alcohol increases the reaction time

  accept 'it slows reactions' ***or** 'it slows the reaction time'*
  'it slows them down' is insufficient

- alcohol reduces co-ordination alcohol causes **or** increases errors of judgement

  accept 'they would feel dizzy'

- alcohol reduces concentration

  accept 'they would be sleepy ***or** drowsy'*
  accept 'alcohol makes them lose more heat'
  accept 'it causes blurred vision'

2 (L7)

(b) any **one** from

- glucose can be absorbed
- starch molecules cannot be absorbed
- it takes time for starch to be broken down
- starch has to be digested **or** broken down

accept 'glucose does not need to be digested'

1 (L7)

[4]

9 (a) (i) enzyme(s)

accept '(hydrochloric) acid'
*do **not** accept other named acids*

accept 'biological catalyst'
'catalyst' is insufficient

*accept any named enzyme (e.g. amylase **or** protease)*
'saliva' is insufficient

1 (L7)

(ii) it is broken down (into smaller molecules)

accept 'forms amino acids'
'it is absorbed' is insufficient

accept 'breaks up'
*do **not** accept 'it breaks down into glucose'*

1 (L6)

(b) (i) any **one** from

- as a control

accept 'control'
'so that it is a fair test' is insufficient

accept 'as a comparison'

- to show that enzyme digested the jelly

accept 'to show what would happen without the enzyme or pineapple'

- to show that water does not digest the jelly

1 (L7)

(ii) any **one** from

- it took less time to digest the jelly (than B)

  *accept 'it breaks it down **or** up more quickly'*
  an explanation of why it is faster is insufficient

- chopped up jelly digested more quickly

  'it is easier to swallow' is insufficient
  'it is easier to digest' is insufficient

  *accept 'it **only** takes an hour to digest'*
  'it digests in an hour' is insufficient

1 (L6)

(c) (i)

- 5 g cube of (chopped up) jelly **and** same amount **or** 15 cm^3 of juice

  accept 'use same amount of jelly and juice'
  *do **not** accept 'water'*

1 (L7)

- boil the juice first

  accept 'use (fresh) boiled juice'
  *do **not** accept 'boiling juice'*

1 (L6)

(ii) the jelly was not digested

accept 'how much jelly had broken down'

accept 'nothing happened'
'nothing' is insufficient as it implies
nothing is left in the test tube

accept '5 g of jelly (cubes)'

accept 'a small amount of jelly has dissolved'
'the jelly has not dissolved' is insufficient

1 (L6)

[7]

10 (a) (i) D

1 (L3)

(ii) E

1 (L3)

(iii) any **one** from

- blood

  accept 'plasma'

- blood vessels

  accept a named blood vessel

  accept 'arteries'; 'veins'

  *a mark should be awarded for 'red **or** white blood cells'*
  as knowledge of the function of blood cells is not expected
  at this level the mark is awarded for the reference to blood

1 (L4)

(b) to provide energy ✓

if more than one box is ticked, award no mark

1 (L3)

(c) (i) Clare

accept 'lemonade and jam or doughnut'

1 (L3)

(ii) Nadia

*accept 'cheeseburger and chips' **or** 'burger and chips'*

1 (L3)

(iii) any **one** from

- it causes heart disease

  accept 'it is bad for your heart'

- it could give you a heart attack

  accept 'it might give you a stroke'

- it clogs your arteries **or** blood vessels

  accept 'it makes you fat'

  accept 'it is bad for the liver'

1 (L3)

[7]

11 (a) (i) • fat

1 (L5)

(ii) • carbohydrate

1 (L5)

(iii) • protein

1 (L6)

(b) any **one** from

- 200 g ✓

if more than one box is ticked, award no mark

1 (L6)

(c) any **one** from

- vitamins

accept a named vitamin

- water
- fibre

accept 'roughage'
*accept 'minerals' **or** a named mineral*
*do **not** accept 'calcium'*

1 (L5)

(d) (i)
- 1100

accept a number from 1000 to 1300

1 (L6)

(ii) any **one** from

- to make milk
- milk contains calcium
- a breast-fed baby needs calcium for growth **or** for bones **or** teeth

accept 'the baby needs calcium'

- she has to have enough calcium for herself and the baby

accept 'to feed herself and the baby'
accept 'the baby needs 600 and she needs 500'
accept 'this is recommended for mother and baby'
'to feed the baby' is insufficient

1 (L6)

[7]

12 (a) oranges ✓

if more than one box is ticked, award no mark

1 (L3)

(b)

amount of vitamin C	increases	decreases	stays the same
in the beans		✓	
in the water	✓		

***both** ticks are required for the mark*

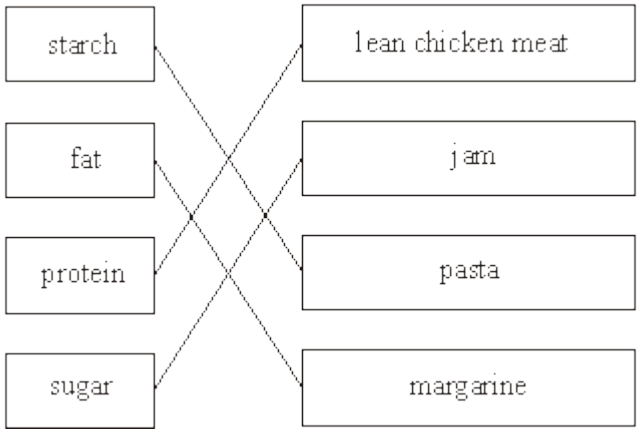
1 (L3)

(c) for strong **or** hard teeth **or** bones

accept 'to keep the skeleton strong'
*accept 'for (healthy) bones **or** teeth'*
*'for toe **or** finger nails' is insufficient*

1 (L4)

(d)



***all four** lines are required for two marks*
*any **two or three** lines are required for one mark*
if more than one line is drawn from any nutrient, do not give credit for that nutrient

2 (L3)

(e) (i) R

1 (L4)

(ii) Q

1 (L4)

[7]

13 (a) • fat

accept 'cream'

1 (L3)

(b) (i) • calcium

1 (L4)

(ii) any **one** from

• in the blood

• in blood vessels

accept 'plasma'
accept a named blood vessel
accept 'arteries' ***or*** *'veins'* ***or*** *'capillaries'*
or *'circulatory system'*
accept 'blood cells' ***or*** *'red cells'*
accept 'the heart pumps blood'
'pumped by the heart' is insufficient

1 (L4)

(c) (i) • mammals ✓

if more than one box is ticked, award no mark

1 (L4)

(ii) • The milk contains antibodies. ✓

if more than one box is ticked, award no mark

1 (L4)

[5]

14 (a) (i) 10

accept answers from 7 to 13

1

(ii) any **one** from

• only some **or** 10% of the energy intake is passed on to the next level in the food chain

• only some **or** 10% of the energy is stored in tissues

• some energy is wasted at each stage

• less energy is passed on to the carnivore

consequential marking applies
accept the percentage given in part (a) (i)

1

(b) a lot of energy is needed for muscle contraction

1

(c) any **one** from

- a cow cannot produce the correct enzyme
- micro-organisms produce the correct enzyme **or** cellulase

1

(d) folds increase the surface area

1

any **one** from

- more absorption takes place
- absorption takes place more efficiently
- absorption takes place more quickly

1

[6]