AQA GCSE BIOLOGY (HIGHER) · 8461

BIOLOGY



EXAM QUESTION PACK

4.2.2 ANIMAL TISSUES, ORGANS AND ORGAN SYSTEMS (PACK 7)

SCORE	PERCENTAGE
/352	%

STEMUP

These questions belong to AQA, not to us.

The examination questions, mark schemes and examiner comments in this pack were written and published by AQA. They are past assessment materials, reproduced here so that students can revise from them.

What we do not own

STEMUP is not affiliated with AQA and does not own, and makes no claim to own, any of the question, mark scheme or examiner report material in this pack. AQA has not endorsed, approved or been involved in the production of it. AQA and the qualification titles used here belong to their respective owners and appear for identification only.

Where to find the originals

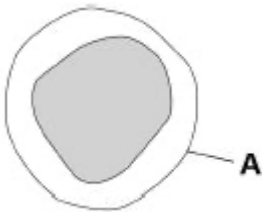
AQA publishes its past papers, mark schemes and examiner reports. Always check the current specification at aqa.org.uk before you revise, because content and wording can change between series.

If you hold the rights to any material in this pack and would like it amended or removed, contact admin@stemup.co.uk and we will act on it.

Q1.

Figure 1 shows one type of white blood cell.

Figure 1



(a) What is structure **A**?

Tick **one** box.

- Cell membrane ☐
- Cell wall ☐
- Cytoplasm ☐
- Nucleus ☐

(1)

(b) White blood cells help to defend the body against pathogens.

How do the white blood cells do this?

Tick **three** boxes.

- Clone pathogens ☐
- Engulf pathogens ☐
- Produce antibiotics ☐
- Produce antibodies ☐
- Produce antitoxins ☐
- Produce toxins ☐

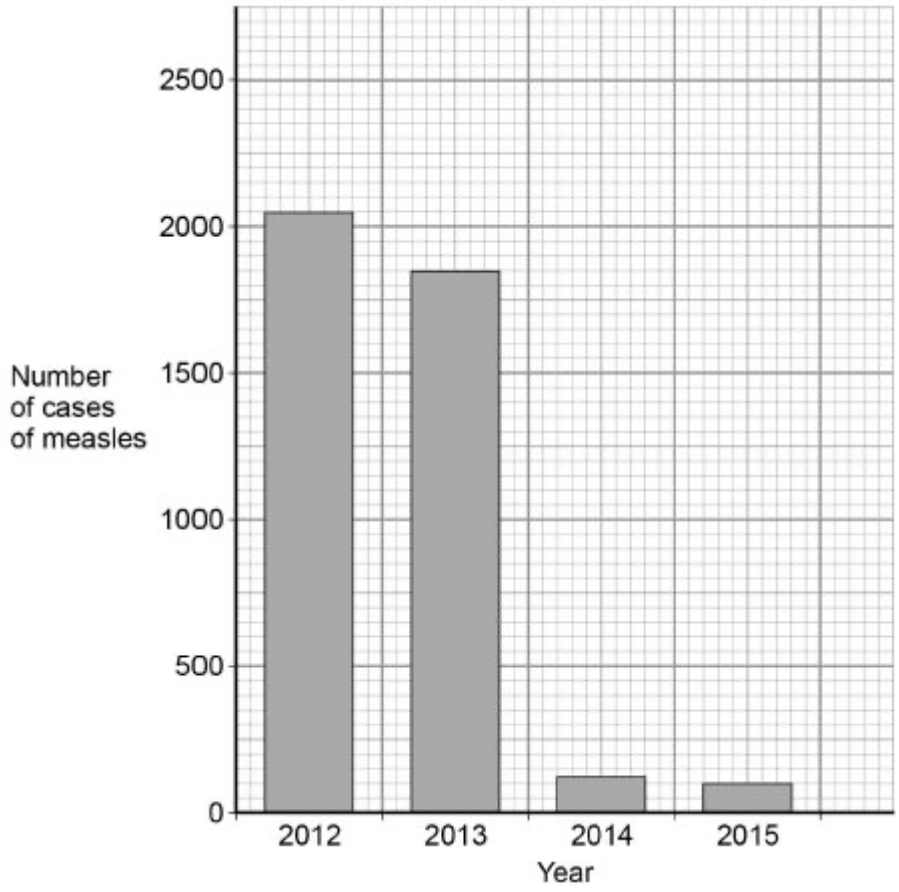
STEMUP.CO.UK

(3)

Measles is a serious disease. A person can die from measles.

Figure 2 shows the number of cases of measles in England and Wales between 2012 and 2015

Figure 2



(c) Use **Figure 2** to calculate the decrease in the number of cases of measles between 2012 and 2015

_____

_____

Answer = _____ cases

(2)

(d) Suggest **one** reason for the decrease in the number of cases of measles between 2012 and 2015

_____

_____

(1)

(e) Antibiotics **cannot** be used to treat measles.

Suggest why.

STEMUP.CO.UK

_____

_____

(1)

(f) Gonorrhoea is a disease caused by a bacterium.

Gonorrhoea **can** be treated with antibiotics.

Give **one** other way to control the spread of gonorrhoea.

_____

_____

(1)

A scientist investigated how effective different antibiotics were at killing gonorrhoea bacteria.

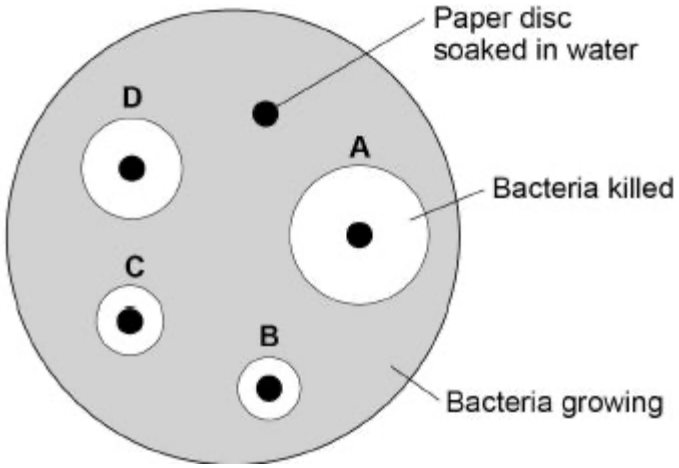
This is the method used.

1. Grow gonorrhoea bacteria on agar in a Petri dish.
2. Place one paper disc soaked in water onto the agar.
3. Place four other paper discs, each soaked in a different antibiotic, **A**, **B**, **C**, and **D**, onto the agar.
4. Use the same sized paper discs and the same concentration of each antibiotic.
5. Incubate the Petri dish for 3 days.

Figure 3 shows the scientist's results.

A clear area around the disc means the antibiotic has killed the bacteria.

Figure 3



(g) Give **one** control variable the scientist used.

_____

_____

(1)

(h) Suggest why **one** disc was soaked in water.

STEMUP.CO.UK

_____

_____

(1)

(i) Which antibiotic in **Figure 3** would be the best to treat gonorrhoea?

Give a reason for your answer.

Antibiotic _____

Reason _____

_____

(2)

(Total 13 marks)

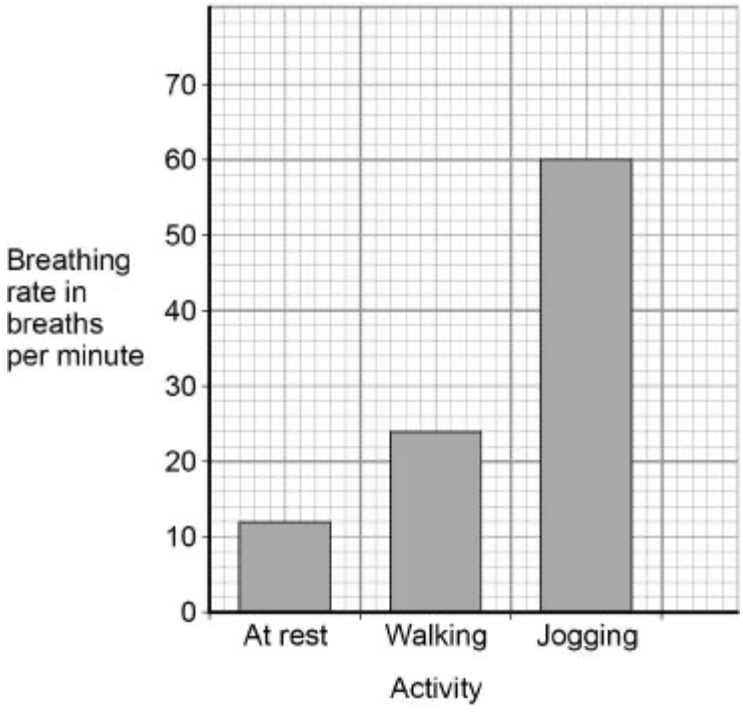
Q2.

Exercise can improve health.

A student measured her breathing rate at rest, when walking and when jogging.

Figure 1 shows her results.

Figure 1



(a) Compare the breathing rates when doing the **three** different activities.

Use values from **Figure 1** in your answer.

_____

_____

STEMUP.CO.UK

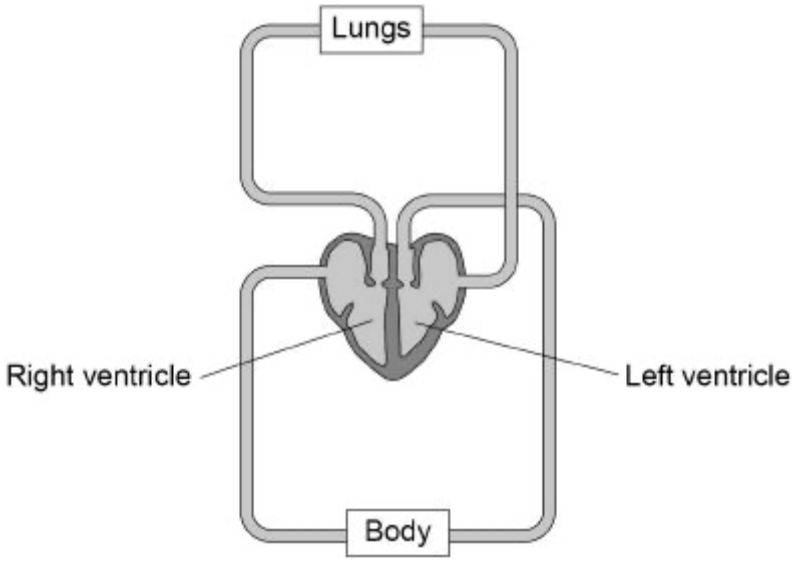
(3)

(b) Explain why the breathing rate changes when doing different activities.

(3)

Figure 2 shows the heart in the circulatory system.

Figure 2



(c) The heart is a double pump.

Describe what this means.

Use **Figure 2** to help you.

STEMUP.CO.UK

_____

(2)

(d) The wall of the left ventricle is much thicker than the wall of the right ventricle.

Suggest **one** reason for this.

_____

_____

_____

(1)

(e) People are encouraged to exercise after recovering from a heart attack.

Suggest **one** reason why.

_____

_____

(1)

(Total 10 marks)

Q3.

Coronary heart disease (CHD) is a non-communicable disease.

CHD is caused when fatty material builds up in the coronary arteries.

(a) Explain what a non-communicable disease is.

_____

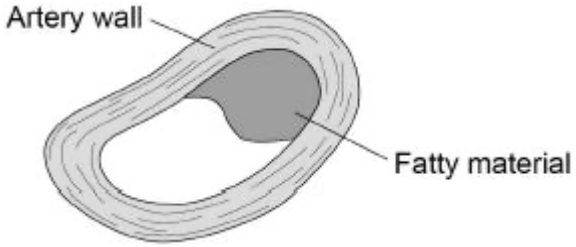
_____

_____

_____

(2)

The diagram below shows a coronary artery of someone with CHD.



(b) Explain how CHD can cause a heart attack.

_____

_____

STEMUP.CO.UK

(3)

(c) Explain how lifestyle and medical risk factors increase the chance of developing CHD.

(6)

(Total 11 marks)

Q4.

Measles is a serious disease. A person can die from measles.

The table below shows the number of medically confirmed cases of measles in England and Wales between 2012 and 2015

Year	Number of medically confirmed cases of measles
2012	2030
2013	1843
2014	121
2015	91

(a) Suggest **one** reason why the actual number of cases of measles in England and

STEMUP.CO.UK

Wales might be higher than is shown in the table above

_____

_____

(1)

(b) Calculate the percentage decrease in the number of medically confirmed cases of measles between 2012 and 2015

_____

_____

_____

_____

Percentage decrease = _____ %

(2)

(c) One reason for the decrease in the number of cases of measles is that more children were vaccinated against the disease.

Vaccinating a large proportion of the population reduces the spread of the measles virus.

Explain why.

_____

_____

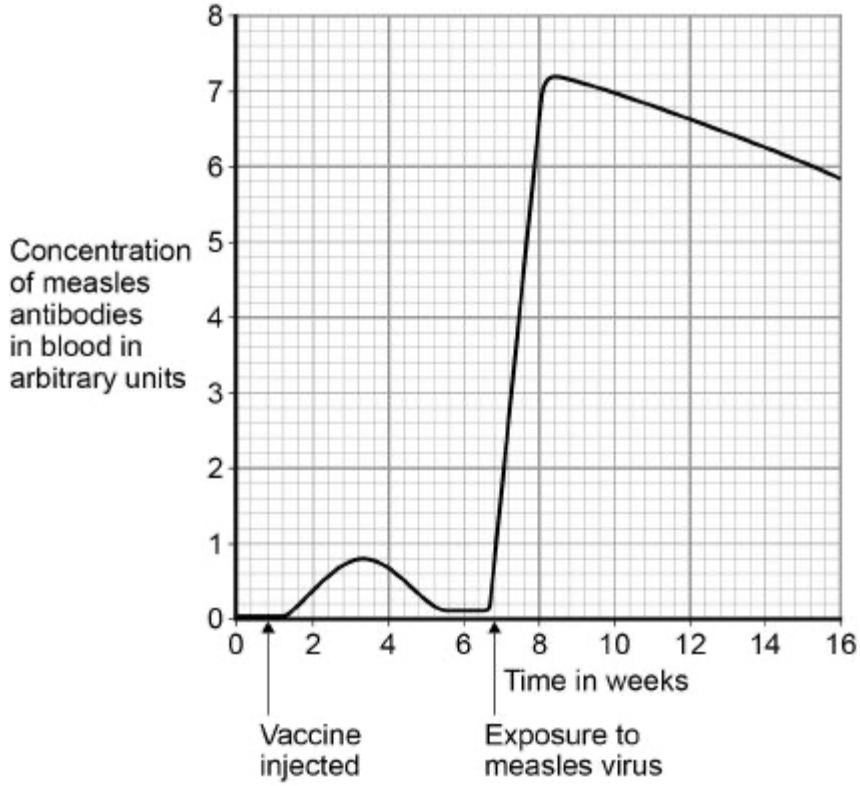
_____

_____

(2)

(d) The graph below shows the concentration of measles antibodies in the blood of a boy.

STEMUP.CO.UK



Explain the differences between antibody production after the vaccine injection and after exposure to the measles virus.

You should include data from the graph above

(6)

(Total 11 marks)

Q5.

STEMUP.CO.UK

The concentration of glucose in the blood is controlled by homeostasis.

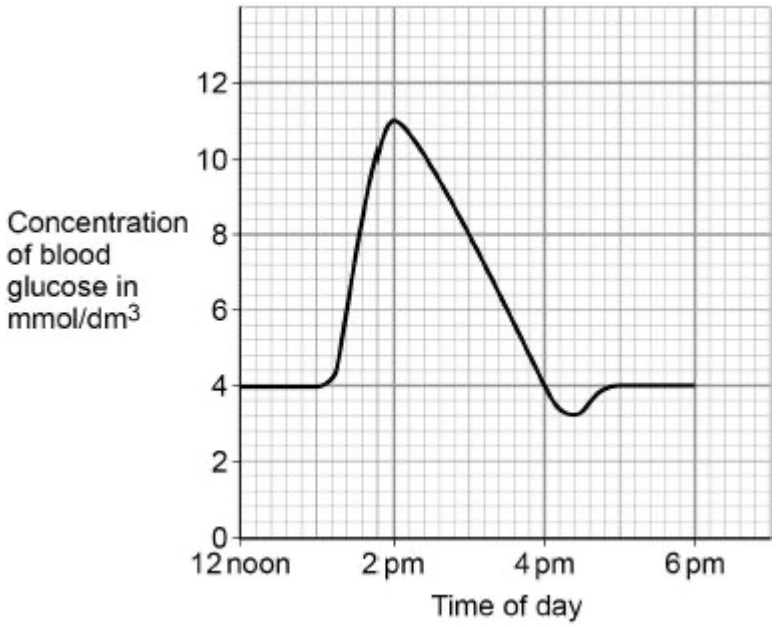
(a) Give **one** other example of an internal condition controlled by homeostasis.

_____

_____

(1)

The graph below shows the change in glucose concentration in the blood of a person with Type 1 diabetes.



(b) Calculate the increase in blood glucose concentration between 1 pm and 2 pm.

_____

_____

Increase in blood glucose = _____ $mmol/dm^3$

(1)

(c) Suggest at what time the person ate lunch.

Use the graph above.

_____

(1)

(d) Name the hormone the person injected that caused the blood glucose concentration to decrease.

_____

(1)

(e) Explain the decrease in blood glucose concentration after the hormone was injected.

Use all the words in the box in your explanation.

STEMUP.CO.UK

blood	cells	glucose	glycogen

(2)

(f) Normal blood glucose concentration is approximately 4 mmol/dm^3

What could be the reason for the blood glucose concentration falling below normal at 4 pm?

Tick **one** box.

The food contained too much glucose	☐
The person ate another meal	☐
The person injected too much hormone	☐
The person fell asleep	☐

(1)

(g) Explain what would happen to the blood glucose concentration if the person went for a run at 6 pm.

(2)

(h) Look at the graph above.

Suggest **one** way that the graph would be different for a person who does not have diabetes.

(1)

(Total 10 marks)

STEMUP.CO.UK

Q6.

Some students tested a red cabbage leaf for starch.

This is the method used.

1. Boil the leaf in ethanol.
2. Rinse the leaf in water.
3. Add the reagent to test the leaf for starch.

(a) Give **one** safety precaution the students should take in this test.

_____

_____

(1)

(b) Which reagent is used to test the boiled leaf for starch?

Tick **one** box.

- Benedict's solution ☐
- Biuret solution ☐
- Iodine solution ☐
- Sodium chloride solution ☐

(1)

(c) What colour will be seen if the test for starch is positive?

Tick **one** box.

- Blue-black ☐
- Pale pink ☐
- Orange ☐
- Red ☐

(1)

The students then used paper chromatography to investigate the coloured pigments in a red cabbage leaf.

STEMUP.CO.UK

(d) Complete the sentences.

Choose answers from the box.

distil	evaporate	filter	mobile	separate	solid

Chromatography can be used to _____ mixtures.

In paper chromatography, the paper is part of the stationary phase.

The solvent is called the _____ phase.

(2)

Table 1 shows the students' results.

The distance each pigment moved was measured from the start line.

	Distance moved in mm	**R_f value**
Yellow-green pigment	17	**X**
Yellow pigment	46	0.42
Orange pigment	100	0.91

The R_f value is calculated using the equation:

$$R_f = \frac{\text{distance moved by pigment}}{\text{distance moved by solvent}}$$

(e) The solvent moved 110 mm from the start line.

Calculate R_f value **X** in **Table 1**.

Give your answer to 2 significant figures.

_____

_____

_____

_____

R_f value **X** = _____

(2)

(f) The known ranges of R_f values of some pigments are shown in **Table 2**.

Table 2

STEMUP.CO.UK

Pigment	R_f value range
Carotene	0.89 to 0.98
Chlorophyll a	0.24 to 0.30
Chlorophyll b	0.20 to 0.26
Xanthophyll	0.04 to 0.28

The R_f value for the orange pigment in red cabbage leaves is 0.91

What is this orange pigment most likely to be?

Tick **one** box.

Carotene ☐

Chlorophyll a ☐

Chlorophyll b ☐

Xanthophyll ☐

(1)

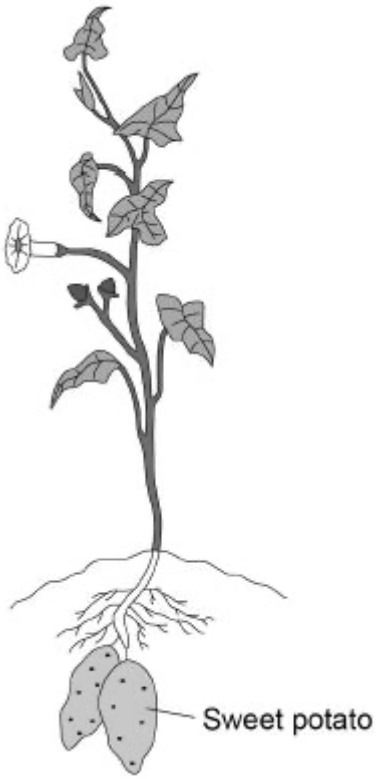
(Total 8 marks)

Q7.

The diagram below shows a sweet potato plant.

The sweet potatoes grow underground and can be cooked and eaten.

STEMUP.CO.UK



The table below shows some of the nutrients in cooked sweet potato.

Nutrient	**Mass in grams per 100 grams of cooked sweet potato**
Water	73.83
Protein	2.01
Fat	0.15
Total carbohydrate of which sugars	20.71 6.55
Fibre	3.30

(a) After cooked sweet potato is digested, sugars (including glucose) pass into the blood.

Give **two** other soluble molecules that would pass into the blood after cooked sweet potato is digested.

1. _____

2. _____

(2)

(b) Calculate the mass of sugars in 180 g of cooked sweet potato.

Use the information from the table above.

_____

STEMUP.CO.UK

Mass of sugars = _____ g

(1)

(c) The sweet potatoes found underground contain starch.

Explain how starch in the sweet potato is produced from carbon dioxide in the air.

(6)

(Total 9 marks)

Q8.

Some students investigated the compounds in a green lettuce leaf and a red cabbage leaf.

The students placed each leaf in boiling ethanol and then tested each leaf for starch.

(a) The boiling point of ethanol is 78 °C

Ethanol is flammable so should not be directly heated with a Bunsen burner.

Give **one** way ethanol can be boiled safely.

Do **not** refer to wearing goggles in your answer.

(1)

(b) Describe how the students could test the leaves for starch.

STEMUP.CO.UK

Give the result if starch is present.

Test _____

_____

Result _____

(2)

(c) The students used paper chromatography to investigate the coloured pigments in both types of leaf.

Explain how paper chromatography causes the different pigments to separate.

_____

_____

_____

_____

_____

_____

(3)

Table 1 shows the students' results. The distance the solvent and each pigment moved was measured from the start line.

Table 1

	Green lettuce		**Red cabbage**	
	Distance moved in mm	R_f value	Distance moved in mm	R_f value
Solvent front	120	−	113	−
Yellow-green pigment	18	0.15	14	0.12
Bright green pigment	24	0.20	Not found	Not found
Yellow pigment	40	0.33	46	0.41
Orange pigment	120	1.00	113	1.00

Table 2 shows the known R_f value ranges of some pigments.

Table 2

Pigment	**R_f value**

STEMUP.CO.UK

Carotene	0.89 −0.98
Pheophytin a	0.42 −0.49
Pheophytin b	0.33 −0.40
Chlorophyll a	0.24 −0.30
Chlorophyll b	0.20 −0.26
Xanthophyll	0.04 −0.28

(d) One pigment was found in the green lettuce leaf, but was **not** found in the red cabbage leaf.

Describe why it is **not** possible to be certain what this pigment is.

Use the information in **Table 1** and **Table 2** to help you.

_____

_____

(1)

(e) The experiment was repeated and the solvent front travelled 140 mm from the start line.

Calculate the range of distances where the pigment carotene would be seen.

Use the equation for calculating R_f values and the information in **Table 2** to help you.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

From _____ mm to _____ mm

(5)

(f) Different coloured pigments absorb light at different wavelengths.

Explain how plants could have evolved to contain more than one pigment in their

STEMUP.CO.UK

leaves.

(6)

(Total 18 marks)

Q9.

In 2017 more than 420 million people worldwide had diabetes.

The table below shows how the percentage of the population with diabetes has changed.

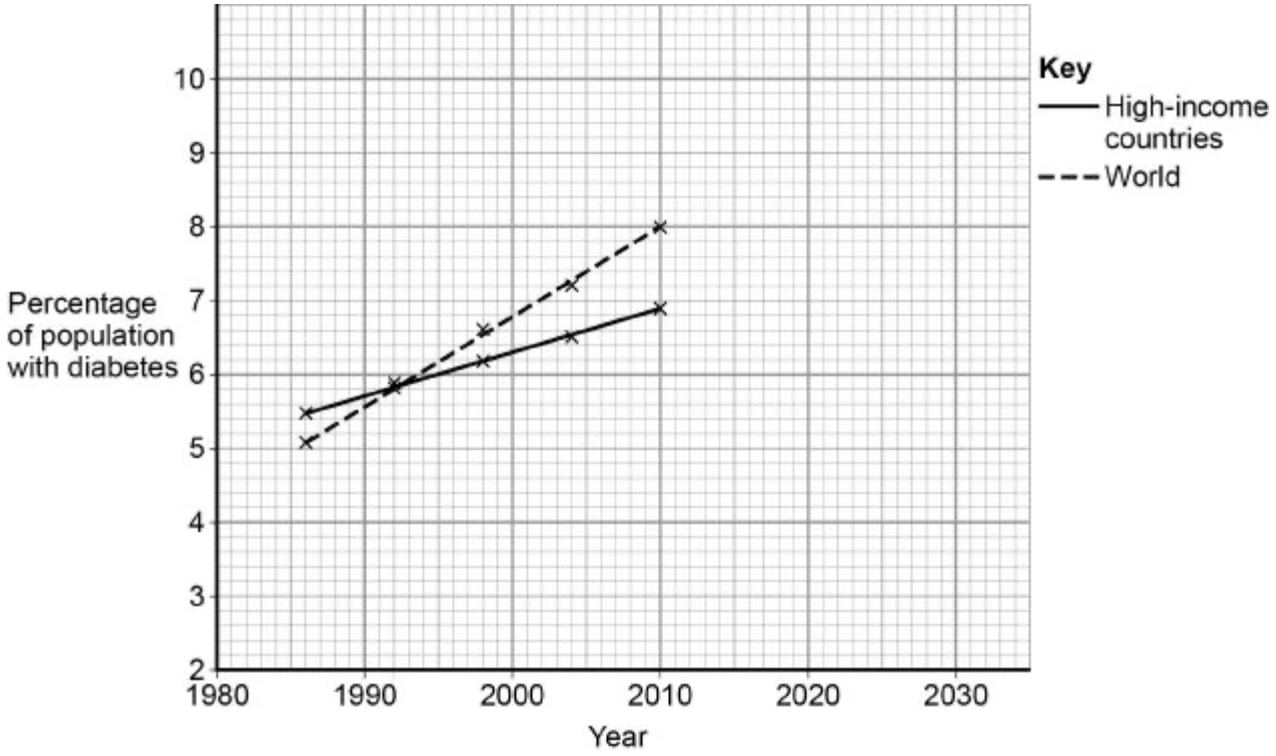
Year	Percentage of population with diabetes		
	Low-income countries	High-income countries	World
1986	3.5	5.5	5.1
1992	4.4	5.9	5.8
1998	5.2	6.2	6.6
2004	6.0	6.5	7.2
2010	6.9	6.9	8.0

(a) Use data from the table above to complete the graph in the graph below.

You should:
- plot the data for the low-income countries
- draw a line of best fit for the low-income countries.

The lines for high-income countries and the world have been drawn for you.

STEMUP.CO.UK



(3)

(b) Predict the percentage of the world population with diabetes in **2022** if the current pattern were to continue.

You should extend the line of best fit for the world on the graph above.

Percentage = _____ %

(2)

(c) The trend may **not** continue in the same pattern after 2010.

Suggest **one** reason why the trend may change.

_____

_____

(1)

(d) Give **two** conclusions from the data shown in the graph above.

1. _____

_____

2. _____

_____

(2)

(e) The table above shows that the percentage of people with diabetes in the world has changed.

STEMUP.CO.UK

What are **two** possible reasons for this change?

Tick **two** boxes.

People are becoming more obese ☐

People are doing more exercise ☐

People are eating less salt ☐

People are eating more sugar ☐

People are smoking less ☐

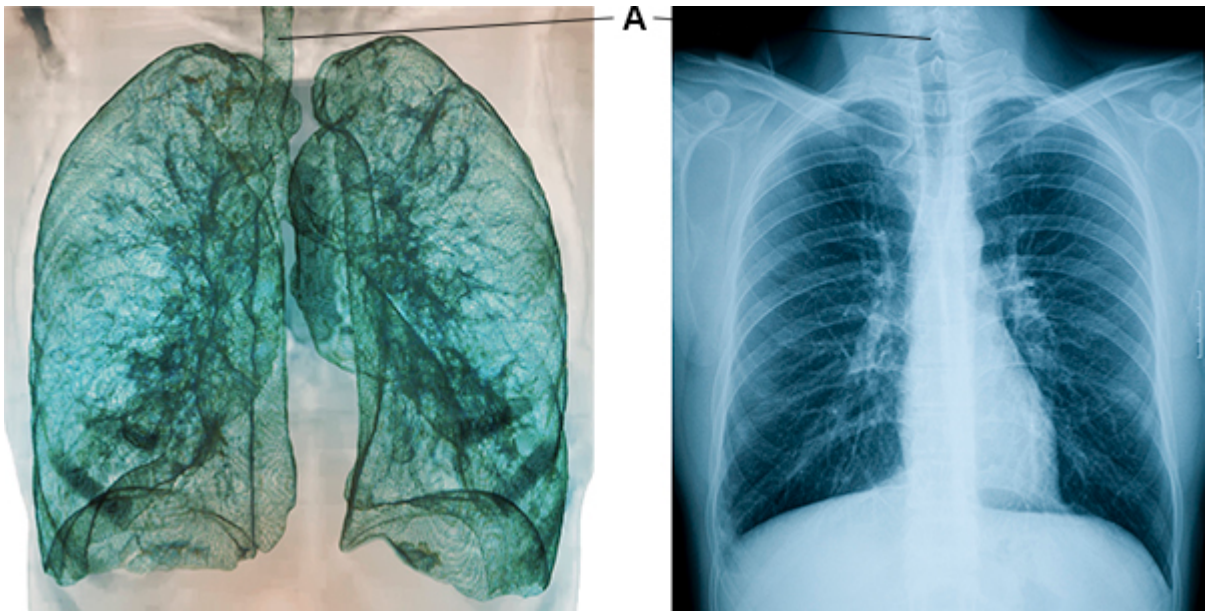
(2)

(Total 10 marks)

Q10.

A man with breathing difficulties goes to hospital.

The photographs below show his lung scan and chest X-ray.



(a) What is part **A**?

Tick **one** box.

Bronchus ☐

STEMUP.CO.UK

Capillary ☐

Trachea ☐

Vein ☐

(1)

(b) Give **one** advantage of using the **lung scan**, rather than the chest X-ray, to diagnose problems with the man's breathing system.

_____

_____

(1)

(c) Give **one** advantage of using the **chest X-ray**, rather than the lung scan, to diagnose problems with the man's breathing system.

_____

_____

(1)

(d) Aerobic respiration and anaerobic respiration are the two types of cell respiration.

Give **three** differences between aerobic and anaerobic respiration.

1. _____

_____

2. _____

_____

3. _____

_____

(3)

(e) A health website contains the following advice:

Stop smoking and you will be healthier and live longer.

Explain why stopping smoking will improve a person's health.

_____

_____

_____

_____

STEMUP.CO.UK

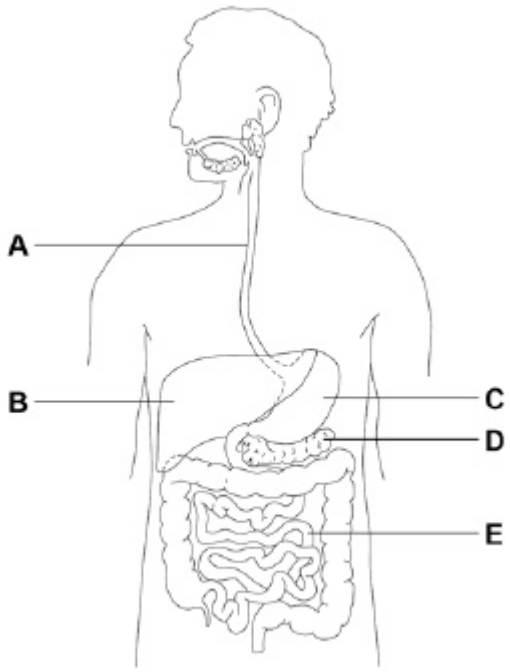
(6)

(Total 12 marks)

Q11.

Figure 1 shows the human digestive system.

Figure 1



(a) Which organ in **Figure 1** produces acid?

STEMUP.CO.UK

Tick **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐ **E** ☐

(1)

(b) Which organ in **Figure 1** produces bile?

Tick **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐ **E** ☐

(1)

(c) Where in **Figure 1** are digested foods absorbed into the blood?

Tick **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐ **E** ☐

(1)

(d) Food molecules such as proteins **cannot** be absorbed unless they are digested.

Give **one** reason why.

_____

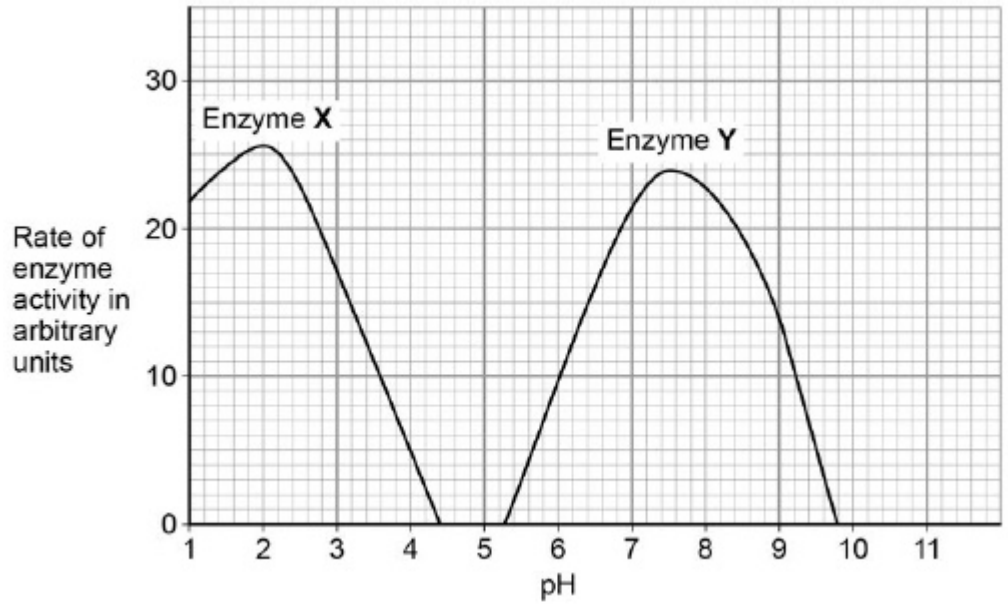
_____

(1)

A scientist investigated the effect of pH on the activity of two protease enzymes.

Figure 2 shows the results.

Figure 2



STEMUP.CO.UK

(e) What is the optimum pH for enzyme **Y**?

pH _____

(1)

(f) Where in the digestive system might the two protease enzymes be produced?

Tick **one** box.

Enzyme X	**Enzyme Y**	
Mouth	Stomach	☐
Pancreas	Mouth	☐
Small intestine	Pancreas	☐
Stomach	Small intestine	☐

(1)

Figure 3 shows a model of an enzyme molecule.

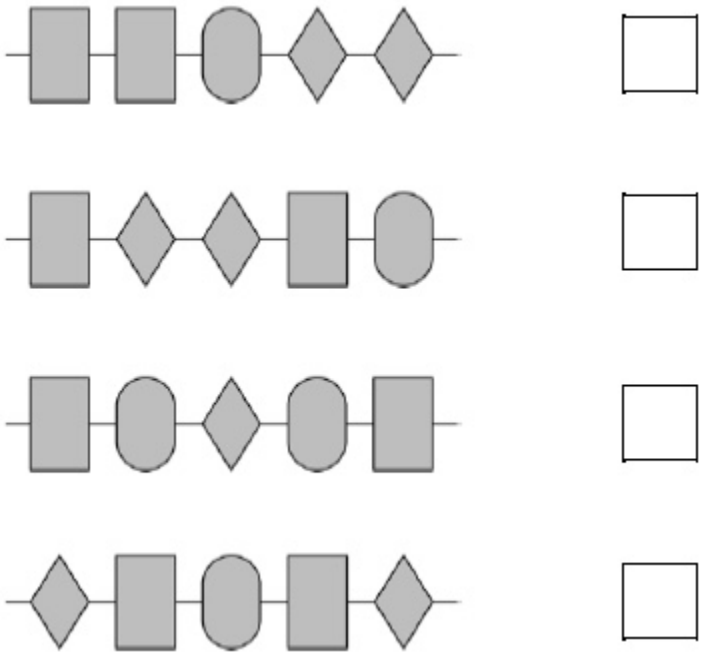
Figure 3



(g) Which substrate fits the enzyme molecule in **Figure 3**?

Tick **one** box.

STEMUP.CO.UK



(1)

(h) The enzyme and substrate diagrams are used as a model for a theory of enzyme action.

What is the name of this theory?

Tick **one** box.

- Evolution ☐
- Lock and key ☐
- Natural selection ☐
- Protein synthesis ☐

(1)

(i) Explain why pH affects enzyme activity.

_____

_____

_____

_____

(2)

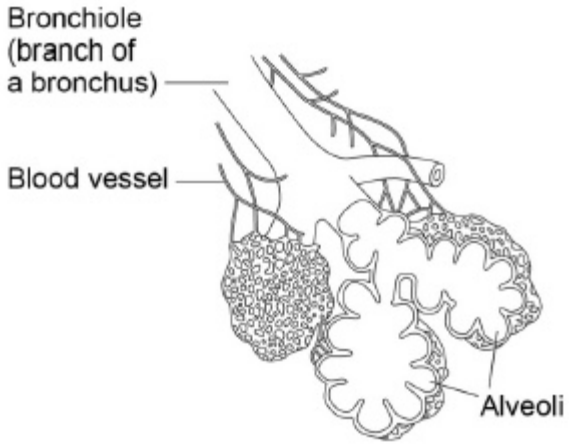
(Total 10 marks)

Q12.

Figure 1 shows part of the lungs.

STEMUP.CO.UK

Figure 1



(a) Give **two** ways the lungs are adapted for efficient exchange of gases.

Describe how each adaptation helps to maintain efficient gas exchange.

Adaptation 1 _____

_____

Description _____

_____

Adaptation 2 _____

_____

Description _____

_____

(4)

(b) There are 5.4 million people with asthma in the UK.

What type of disease is asthma?

Tick **one** box.

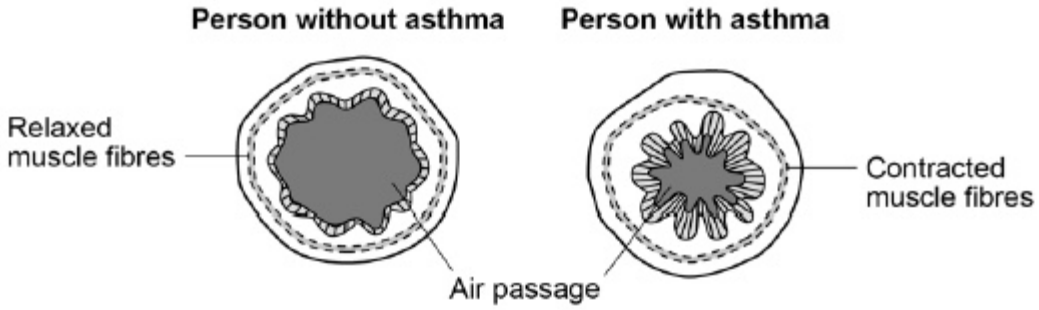
- An allergy ☐
- A bacterial infection ☐
- A cancer ☐
- A viral infection ☐

(1)

(c) **Figure 2** shows cross-sections of bronchioles of two people.

STEMUP.CO.UK

Figure 2



Suggest why people with asthma often find it difficult to breathe.

_____

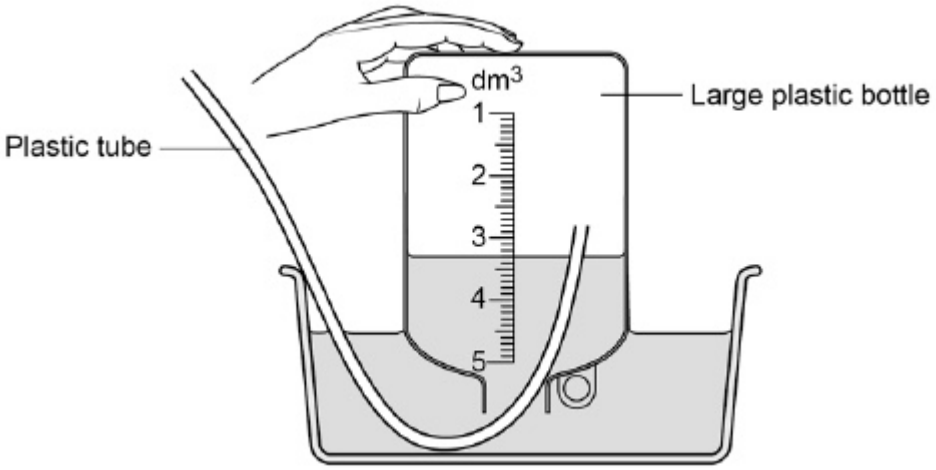
_____

(1)

(d) People with asthma often have a reduced lung volume.

Figure 3 shows the apparatus a student used to measure his lung volume.

Figure 3



This is the method used.

1 Fill the bottle with water.

2 Breathe out through the tube.

The volume of water pushed out of the bottle is equal to his lung volume.

What is the student's lung volume?

Volume = _____ dm^3

(1)

Scientists tested a new drug to treat asthma.

The scientists measured the lung volume of:

- volunteers without asthma

STEMUP.CO.UK

- some volunteers during a mild asthma attack
- other volunteers during a severe asthma attack.

Half the people in each group were given a placebo.

The other half of the people in each group were given the new drug.

The tests were carried out as a double blind trial.

(e) What is a placebo?

_____

_____

(1)

(f) Who knows which volunteers in a double blind trial are given the drug and which volunteers are given the placebo?

Tick **one** box.

The scientists but not the volunteers	☐
The scientists and the volunteers	☐
The volunteers but not the scientists	☐
Neither the volunteers nor the scientists	☐

(1)

(g) Suggest why it is a good idea that double blind trials should be used in drug testing?

_____

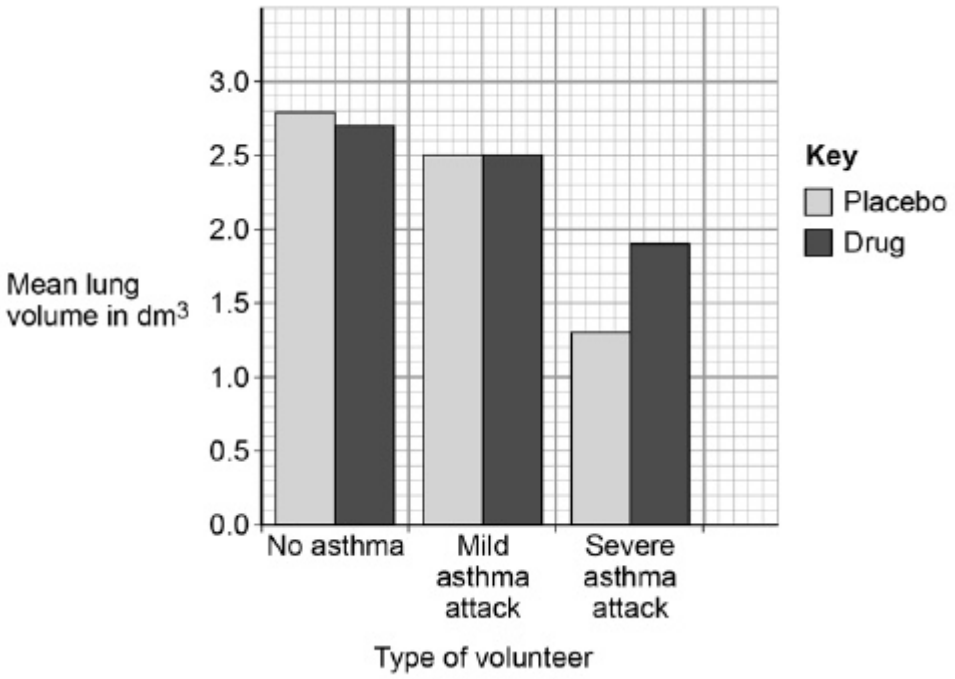
_____

(1)

(h) **Figure 4** shows the results of the drug tests.

Figure 4

STEMUP.CO.UK



Give **two** conclusions that can be made about the usefulness of the drug.

1. _____

_____

2. _____

_____

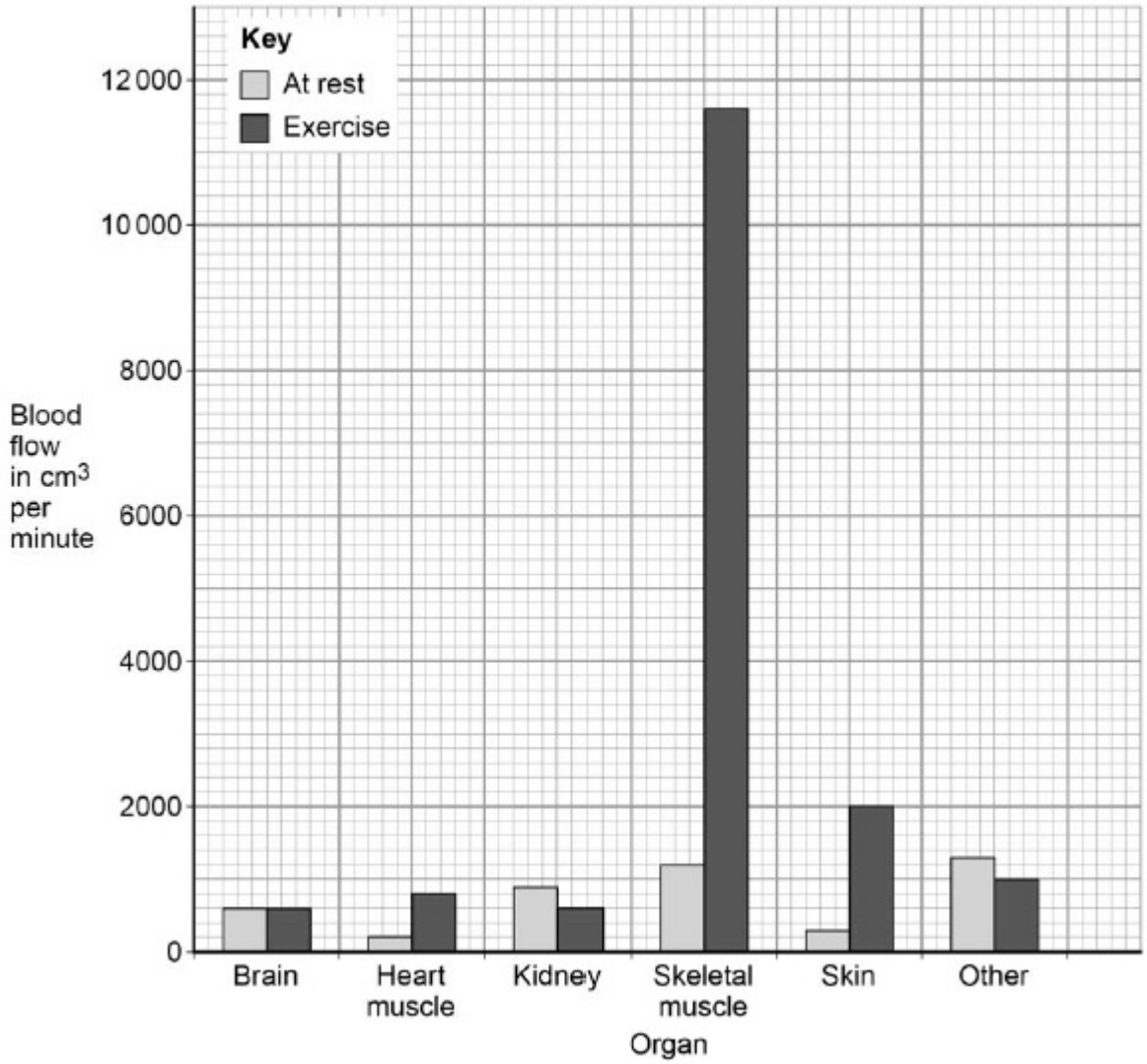
(2)

(Total 12 marks)

Q13.

The graph shows the rate of blood flow through different organs at rest and during exercise.

STEMUP.CO.UK



(a) Determine the total volume of blood that flows through the brain in 1 hour.

Volume = _____ cm^3

(1)

(b) Look at the blood flow through the skeletal muscle.

Calculate how many times the blood flow increases by during exercise compared to at rest.

Answer = _____

(2)

(c) Explain why the blood flow to the skeletal muscles increases during exercise.

STEMUP.CO.UK

(3)

(d) Arteries and veins have different structures and different functions.

Explain how the different structure of arteries and veins relates to their different functions.

(6)

(Total 12 marks)

Q14.

Proteins are broken down by protease enzymes.

(a) Which organs in the digestive system produce protease enzymes?

Tick **one** box.

Mouth and liver ☐

Mouth and stomach ☐

STEMUP.CO.UK

Pancreas and liver ☐

Stomach and pancreas ☐

(1)

A student used a colorimeter to investigate the rate of protein digestion of an insoluble protein.

A colorimeter measures the percentage of light that passes through a liquid.

The student measured the percentage of light passing through different concentrations of protein suspension.

The student used the results to produce a concentration curve.

The table shows the results.

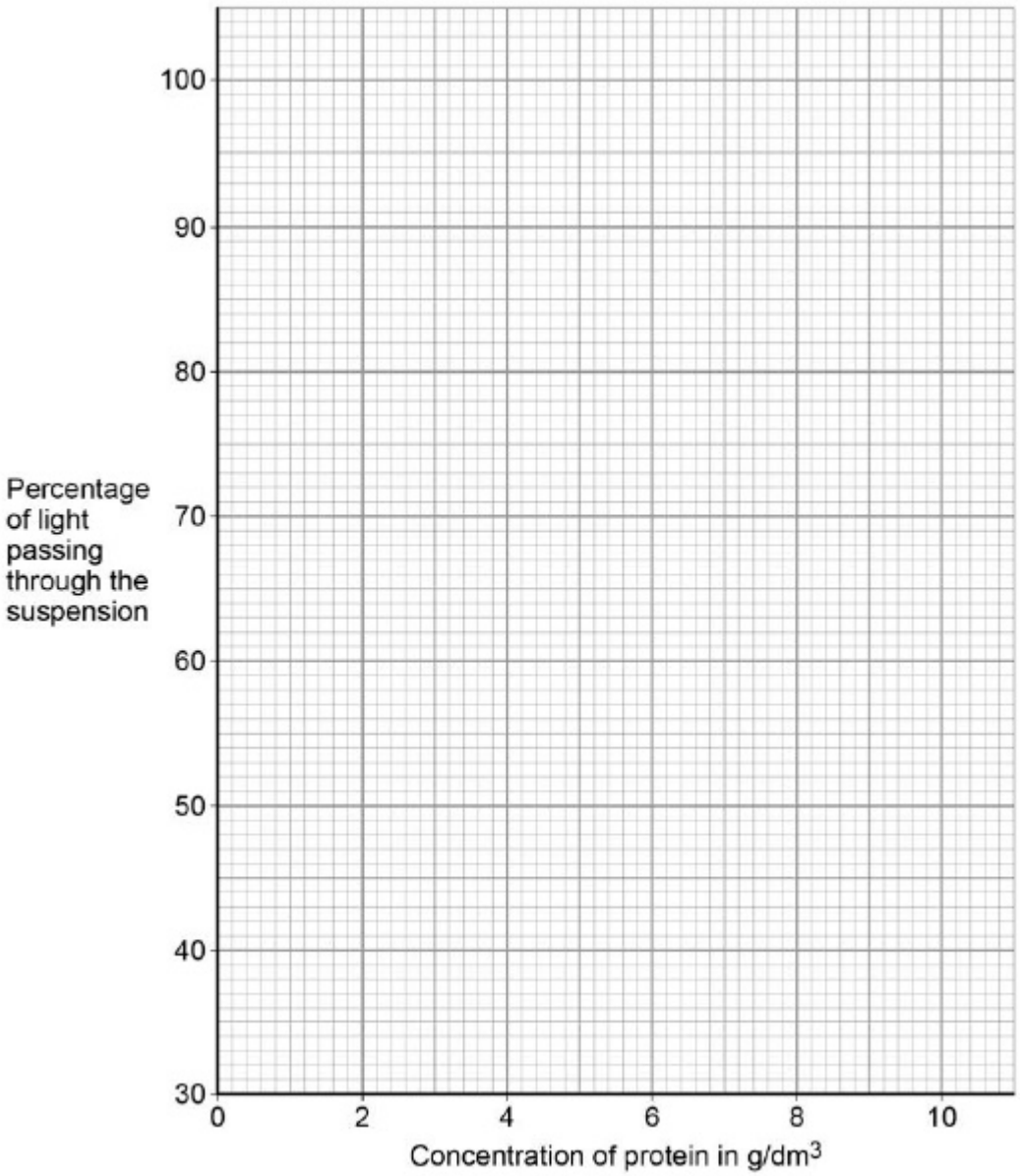
Concentration of protein in g/dm^3	**Percentage of light passing through the suspension**
0.0	100
0.5	93
2.0	75
10.0	38

(b) Plot the data from the table on **Figure 1**.

Draw a line of best fit.

Figure 1

STEMUP.CO.UK



(3)

(c) Explain the change in the percentage of light passing through the suspension.

_____

_____

_____

_____

(2)

(d) Suggest how the student could improve their investigation to draw a more accurate concentration curve.

_____

_____

(1)

STEMUP.CO.UK

The student then investigated the rate of protein digestion with protease obtained from two different organs.

This is the method used.

1. Put 5 cm^3 of protease from each organ into separate test tubes.

2. Put 10 cm^3 of protein suspension into two other test tubes.

3. Put all four tubes into a water bath at 37 °C for 10 minutes.

4. Mix each 5 cm^3 of protease into a tube of protein suspension.

5. Take a sample of each mixture every 2 minutes.

6. Measure the percentage of light passing through each sample using a colorimeter.

(e) Suggest why the protease and the protein suspension were put into a water bath before being mixed.

_____

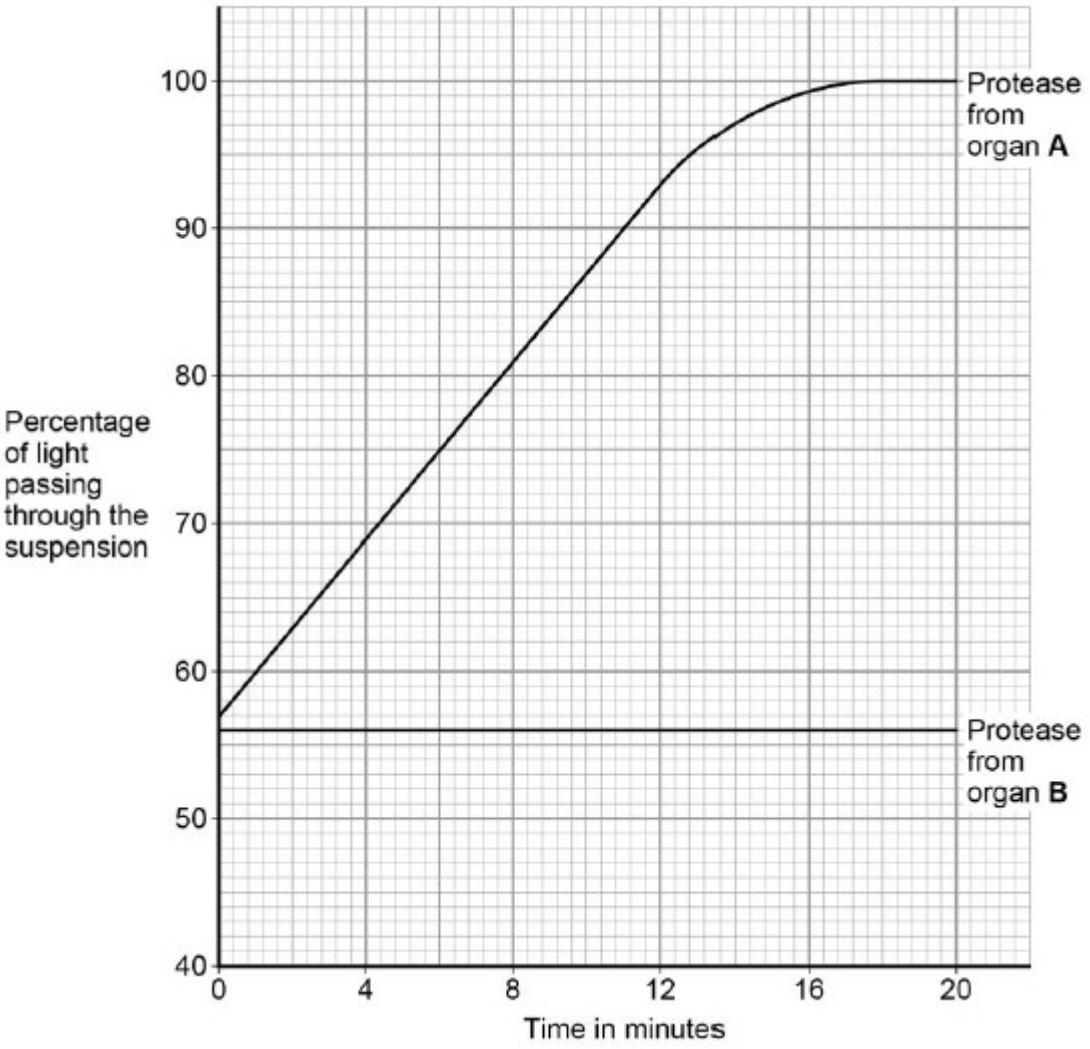
_____

(1)

Figure 2 shows the student's results.

Figure 2

STEMUP.CO.UK



(f) Determine the concentration of protein at the start of the reaction with protease from organ **A**.

Use **Figure 2** and your graph in **Figure 1**.

_____

_____

Concentration = _____ g/dm^3

(1)

(g) Calculate the rate of protein digestion with protease from organ **A** over the first 12 minutes.

Use **Figure 2** and your graph in **Figure 1**.

_____

_____

_____

_____

STEMUP.CO.UK

Rate = _____ g/dm^3 per minute

(1)

(h) Describe how the activity of protease from organ **B** is different from the activity of protease from organ **A**.

Suggest **one** reason for the difference.

_____

_____

_____

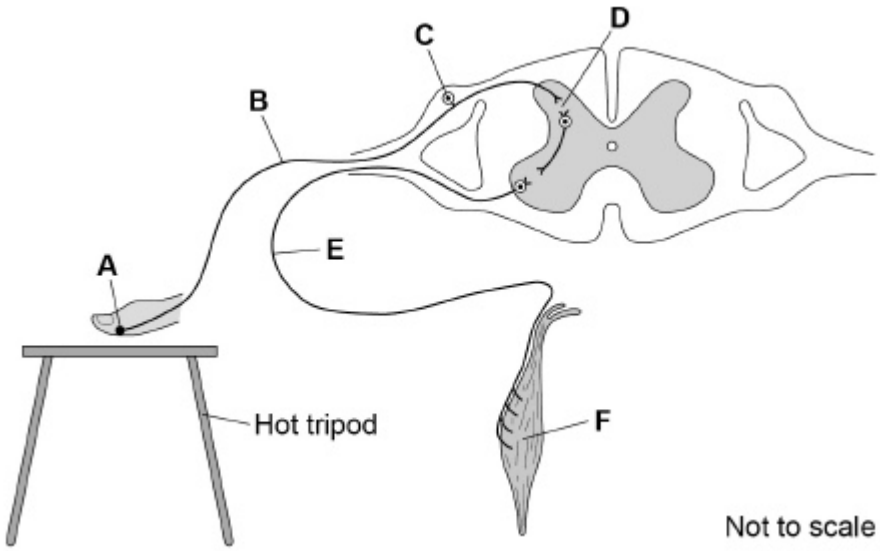
_____

(2)

(Total 13 marks)

Q15.

The diagram shows a reflex arc that moves the arm if the hand touches something hot.



(a) Which part is the receptor?

Tick **one** box.

A ☐ **B** ☐ **D** ☐ **F** ☐

(1)

(b) Which part is the effector of the reflex action?

Tick **one** box.

A ☐ **B** ☐ **D** ☐ **F** ☐

(1)

STEMUP.CO.UK

(c) Which part shows a sensory neurone?

Tick **one** box.

B ☐ **D** ☐ **E** ☐ **F** ☐

(1)

(d) Which part shows a synapse?

Tick **one** box.

A ☐ **B** ☐ **D** ☐ **E** ☐

(1)

(e) Part **C** contains DNA.

Which part of the nerve cell is **C**?

Tick **one** box.

Cell membrane ☐

Cytoplasm ☐

Mitochondrion ☐

Nucleus ☐

(1)

(f) Reflex actions are automatic and do not involve thinking.

Why is this an advantage?

_____

_____

(1)

(g) Which two factors can make you slower to react to a stimulus?

Tick **two** boxes.

Alcohol ☐

Caffeine ☐

Daylight ☐

STEMUP.CO.UK

Practice ☐

Tiredness ☐

(2)

(Total 8 marks)

Q16.

Respiration occurs in living cells.

(a) Complete the word equation for aerobic respiration.

_____ + oxygen → _____ + _____

(3)

Lactic acid is produced in muscles when there is insufficient oxygen for aerobic respiration.

(b) Suggest how muscles feel when lactic acid levels increase.

_____

_____

(1)

Scientists investigated the concentration of lactic acid in the blood of an athlete running at different speeds.

This is the method used.

1. An athlete runs on a treadmill at a speed of 3.0 metres per second (m/s).

2. After 10 minutes her blood lactic acid concentration is recorded.

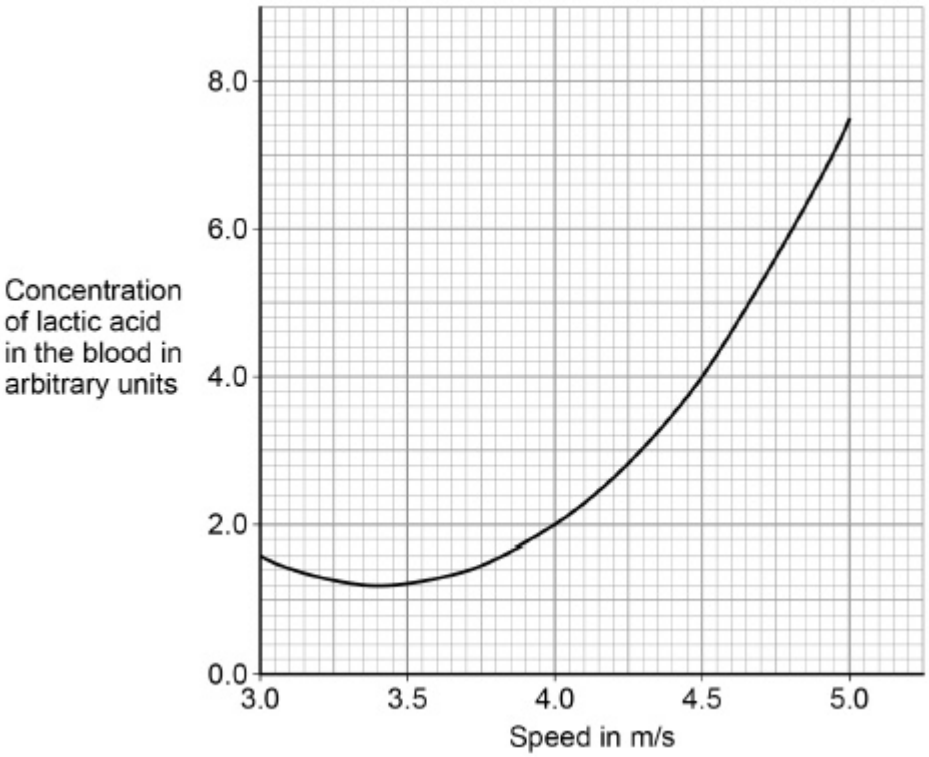
3. The athlete rests until her lactic acid concentration returns to normal.

4. She repeats the investigation at different speeds.

The room was kept at 18 °C.

The graph shows the scientists' results.

STEMUP.CO.UK



(c) Give **three** control variables in this investigation.

1. _____

_____

2. _____

_____

3. _____

_____

(3)

(d) Describe the trend shown in **Figure 2** between 3.5 m/s and 5.0 m/s

_____

_____

_____

_____

(2)

(e) Determine the change in lactic acid concentration in the blood between 3.5 m/s and 5.0 m/s

_____

_____

_____

STEMUP.CO.UK

Change in lactic acid concentration = _____ arbitrary units

(2)

(f) As the speed increases the heart rate of the athlete increases.

As the speed increases from 3.0 m/s to 3.4 m/s lactic acid concentration in the blood decreases.

Explain how an increase in heart rate could cause the decrease in lactic acid concentration.

Use words from the box.

blood flow	**muscle**	**oxygen**	**respiration**

_____

_____

_____

_____

_____

_____

(3)

(g) After the athlete stops running, her heart rate and breathing rate do **not** immediately return to normal.

Why does it take time for her heart rate and breathing rate to return to normal?

Tick **two** boxes.

After anaerobic respiration oxygen debt must be repaid.	☐
Carbon dioxide is not being produced.	☐
Increased breathing rate delivers more carbon dioxide to muscles.	☐
Increased heart rate delivers more glucose to muscles.	☐
Oxygen is needed to remove lactic acid from muscles.	☐

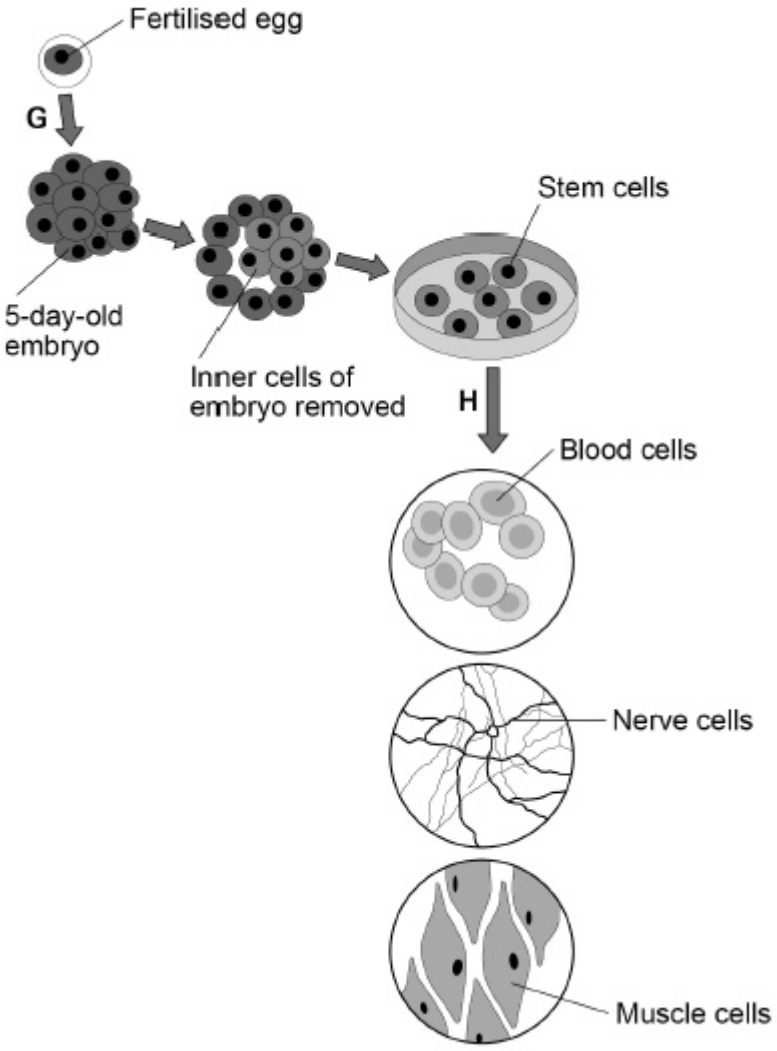
(2)

(Total 16 marks)

Q17.

The diagram shows how cells from human embryos can be used to grow 'replacement body parts' for humans.

STEMUP.CO.UK



(a) How many chromosomes are in a **fertilised** human egg?

Tick **one** box.

12 ☐ 23 ☐ 46 ☐ 92 ☐

(1)

(b) What is the process labelled **G**?

Tick **one** box.

Fertilisation ☐

Inheritance ☐

Meiosis ☐

Mitosis ☐

(1)

STEMUP.CO.UK

(c) When the embryo is three days old, it contains eight cells.

How many times has the fertilised egg cell divided by day three?

Tick **one** box.

2 ☐ 3 ☐ 4 ☐ 8 ☐

(1)

(d) Stem cells become specialised in the process labelled **H** in the diagram.

What is the process labelled **H**?

Tick **one** box.

Differentiation ☐

Evolution ☐

Genetic modification ☐

Selective breeding ☐

(1)

(e) Which **two** parts would be found in all the cells in the diagram.

Tick **two** boxes.

Cell membrane ☐

Cell wall ☐

Chloroplasts ☐

Cytoplasm ☐

Plasmids ☐

(2)

(f) Why might stem cells from human embryos be more useful than stem cells from adults?

_____

_____

(1)

(g) Some parents have stem cells from the umbilical cord of their baby collected and stored.

STEMUP.CO.UK

These stem cells can be used to treat diseases in the child later in life.

Why might stem cells from their own umbilical cord be used rather than stem cells from another embryo?

Tick **one** box.

Less risk of rejection of umbilical cord stem cells.	☐
Stem cells from another embryo can treat more diseases.	☐
Umbilical cord stem cells are older.	☐

(1)

(h) Some medical uses of stem cells are still experimental.

Why do some scientists have concerns about the use of stem cells?

_____

_____

(1)

(i) Some people object to the use of embryonic stem cells because of religious beliefs.

Give **one** other ethical concern about the use of embryonic stem cells?

_____

_____

(1)

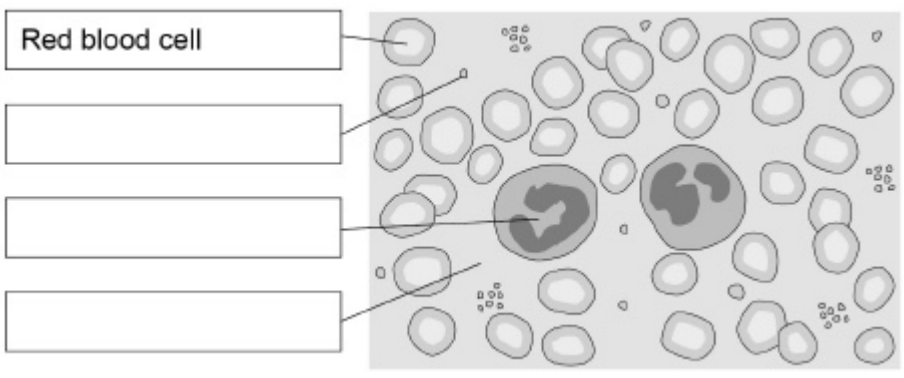
(Total 10 marks)

Q18.

Figure 1 shows an image of blood viewed with a microscope.

(a) Label **Figure 1**.

Figure 1



(3)

STEMUP.CO.UK

(b) The mean concentration of red blood cells in an adult is 5.5×10^6 cells per mm^3

1 mm^3 = 0.000001 dm^3

Calculate the mean number of red blood cells in 1 dm^3

Give your answer in standard form.

Mean number of red blood cells in 1 dm^3 = _____

(3)

(c) Calculate the number of red blood cells in an adult who has 5.2 dm^3 of blood.

Use your answer from part (b).

Number of red blood cells in an adult = _____

(1)

Sickle cell disease is an inherited disorder that causes some red blood cells to have a sickle shape.

Figure 2 shows two red blood cells.

Figure 2



Normal shaped red blood cell

Sickle shaped red blood cell

(d) A person only has sickle cell disease if two copies of the sickle cell allele are inherited.

What does this tell us about the sickle cell allele?

STEMUP.CO.UK

(1)

(e) Explain how the shape of the red blood cells in a person with sickle cell disease could affect how much oxygen reaches their muscles.

(6)

(f) Suggest **one** symptom of sickle cell disease.

(1)

(Total 15 marks)

Q19.

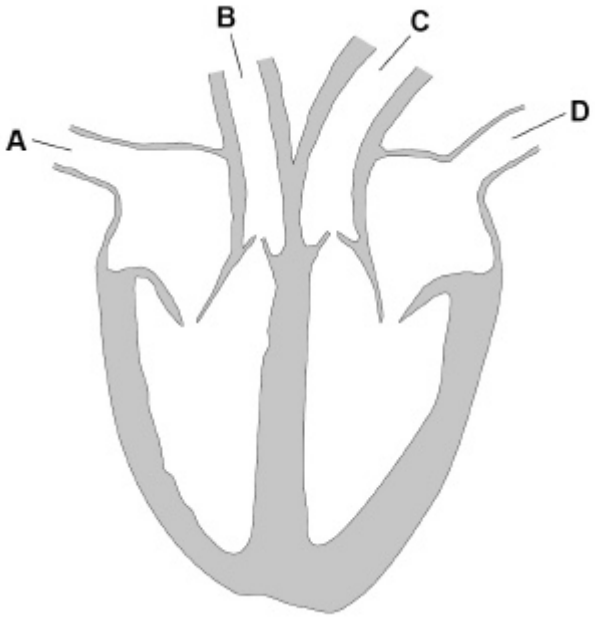
Some animals have a single circulatory system.

(a) Why is the human heart referred to as part of a dual circulatory system?

(1)

Below is a diagram of a human heart.

STEMUP.CO.UK



(b) Which label shows the pulmonary vein?

Tick **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

(1)

(c) Which blood vessel takes oxygenated blood away from the heart?

Tick **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

(1)

(d) Name the blood vessels that deliver oxygen to the capillaries in heart muscle.

_____

(1)

(e) Pacemaker cells are a group of cells that control heart rate.

Where in the heart are the pacemaker cells located?

_____

(1)

(f) What type of signal is sent from the pacemaker cells to the heart muscle?

_____

_____

(1)

In a scientific investigation over 44 000 men were monitored for 12 years.

STEMUP.CO.UK

The men were divided into four groups based on their number of hours of physical activity they did per week.

The results are shown in the table.

Group	**W**	**X**	**Y**	**Z**
Mean number of hours of physical activity per week	1	5	12	24
Percentage who are smokers	14	11	9	7
Percentage with high cholesterol	11	10	11	11
Percentage with family history of heart disease	12	12	12	12
Mean percentage of fat in diet	34	33	32	30
Number of cases of heart disease	423	370	336	294

(g) Give **two** other factors which may affect the risk of heart disease.

You should **not** refer to the factors shown in the table.

1. _____

_____

2. _____

_____

(2)

(h) Evaluate whether the data shows that increased hours of physical activity reduces the risk of heart disease.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

STEMUP.CO.UK

_____

_____

_____

(6)

(Total 14 marks)

Q20.

An athlete decides to try a new type of protein drink after he exercises.

(a) The athlete tests the protein drink to check it contains protein.

Which solution is used to test for protein in the drink?

Tick **one** box.

Benedict's	☐
Biuret	☐
Iodine	☐
Universal indicator	☐

(1)

(b) What colour will the solution turn to if there is protein in the drink?

Tick **one** box.

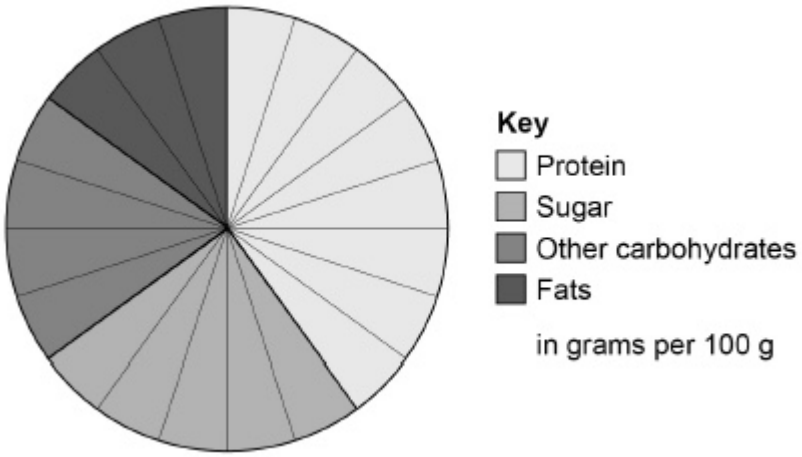
Blue-black	☐
Purple	☐
Red	☐
Yellow	☐

(1)

Figure 1 shows the proportion of different nutrients in the protein drink.

Figure 1

STEMUP.CO.UK



(c) What is the ratio of sugar to protein in the protein drink?

1:1 ☐ 1:0:6 ☐ 1:2 ☐ 1:1:6 ☐

(1)

(d) Why is a high protein diet useful to an athlete?

Tick **one** box.

Provides amino acids to make new muscle. ☐

Provides fatty acids to produce urea. ☐

Provides glucose for energy. ☐

Provides lactic acid for anaerobic respiration. ☐

(1)

When the athlete drinks the protein drink the substances are digested.

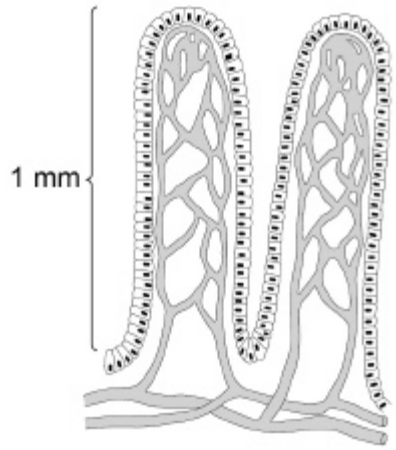
The products of digestion are absorbed into the bloodstream.

Absorption happens in the small intestine.

Figure 2 shows a section of the small intestine.

Figure 2

STEMUP.CO.UK



(e) How is the small intestine in **Figure 2** adapted to absorb the products of digestion quickly?

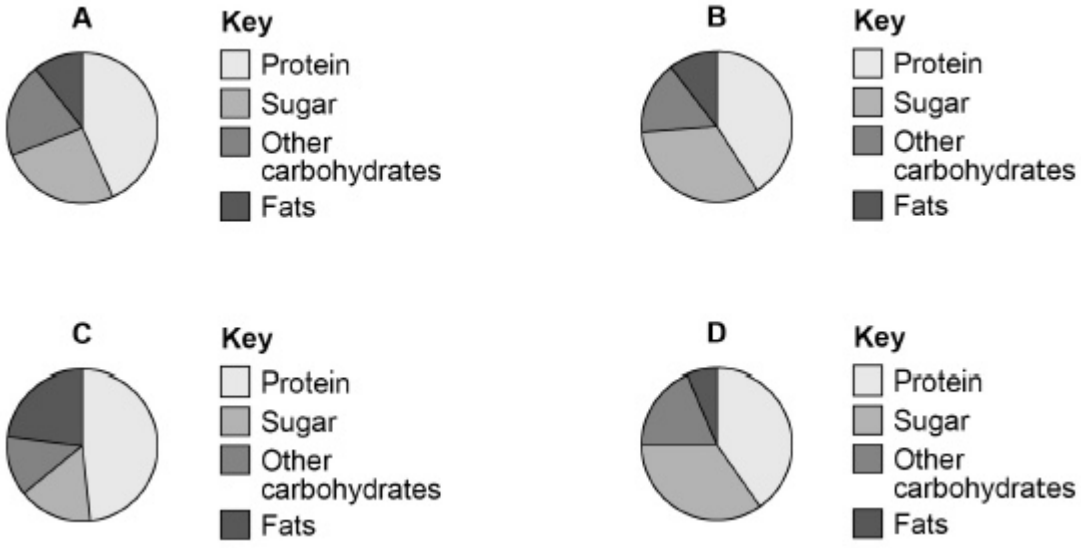
Tick **two** boxes.

- It has a large surface area. ☐
- It has a long diffusion pathway. ☐
- It has a thin surface. ☐
- The concentration inside the small intestine is low. ☐
- It has a poor blood supply. ☐

(2)

(f) **Figure 3** shows the proportion of different nutrients in four protein drinks.

Figure 3



Which protein drink should an athlete with diabetes use?

STEMUP.CO.UK

Give a reason for your answer.

Drink _____

Reason _____

_____

(2)

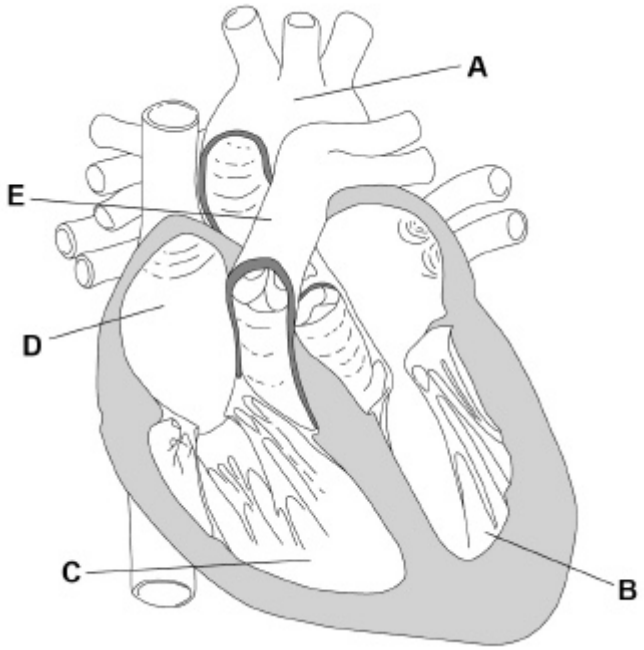
(Total 8 marks)

Q21.

This question is about the circulatory system.

Figure 1 shows a human heart.

Figure 1



(a) What is the name of vessel **E**?

Tick **one** box.

Aorta	☐
Pulmonary artery	☐
Pulmonary vein	☐
Vena cava	☐

(1)

(b) Heart rate is controlled by a natural pacemaker.

STEMUP.CO.UK

Where in **Figure 1** is the heart's natural pacemaker?

Tick **one** box.

A ☐ **B** ☐ **C** ☐ **D** ☐

(1)

An electrocardiogram (ECG) records the rhythm and electrical activity of the heart. Heart rate can be measured using an ECG.

An ECG shows a peak each time the heart beats.

Figure 2 is an ECG graph showing a natural resting heart rate.

Figure 2



(c) **Figure 2** shows 7 seconds of the ECG graph.

Calculate the heart rate per minute shown by the ECG in **Figure 2**.

_____

_____

_____

Heart rate = _____ beats per minute

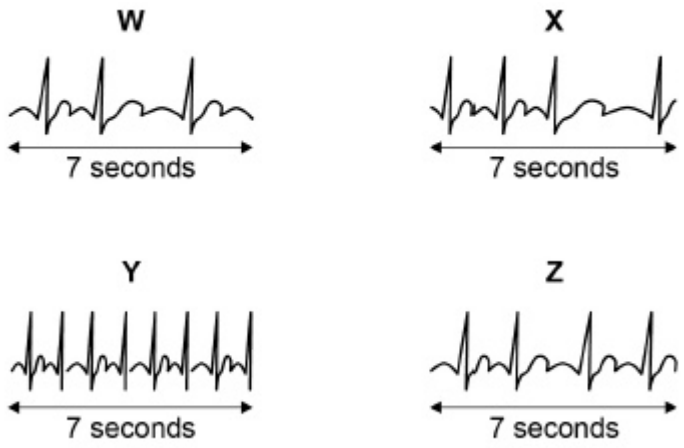
(2)

A man goes to hospital because he has an irregular heart rate.

Doctors measure his heart rate and fit an artificial pacemaker.

Figure 3 shows ECGs for the man before and after he had a pacemaker fitted.

Figure 3



STEMUP.CO.UK

(d) Which ECG in **Figure 3** was recorded after the pacemaker was fitted and the man's heart was working normally again.

Give a reason for your answer.

ECG _____

Reason _____

_____

(2)

(e) Blood carries many different substances around the body.

The table shows information about different substances in blood samples.

Blood sample	Substance			
	Carbon dioxide in mg	**Glucose in mg / dm^3**	**Oxygen in mg / dm^3**	**Sodium chloride in mg / dm^3**
A	1100	90	262	312
B	1054	91	256	320
C	1070	96	270	315
D	1400	88	198	310

A student concludes:

- blood sample **D** was taken from a vein
- blood samples **A**, **B** and **C** were taken from arteries.

Give **two** reasons to support the conclusion that blood sample **D** was taken from a vein.

Use the table.

1. _____

_____

2. _____

_____

(2)

(f) Complete the sentence.

Carbon dioxide moves from cells into the blood through the walls of

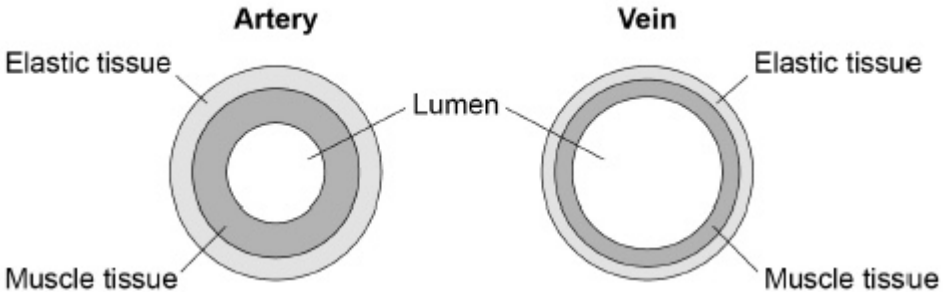
blood vessels called _____ .

(1)

(g) **Figure 4** shows the structure of an artery and the structure of a vein.

STEMUP.CO.UK

Figure 4



Give **two** differences in the structure of an artery compared with the structure of a vein.

1. _____

_____

2. _____

_____

(2)

(Total 11 marks)

Q22.

A student measured the effect of concentration of glucose on the absorption of light using a colorimeter.

A colorimeter measures how much light is absorbed as it passes through a solution.

The student used reagent **A**. When reagent **A** is added to glucose solution a blue compound is formed.

This is the method used.

1. Put 10 cm^3 of 0.03 g/cm^3 into a test tube.
2. Add 5cm^3 of reagent **A**.
3. Place the test tube into the colorimeter.
4. Record the light absorbed.
5. Repeat steps 1–4 with different concentrations of glucose solution.

Table 1 shows the student's results.

Table 1

Concentration of glucose solution in g/cm^3	Light absorbed in arbitrary units
0.03	0.07

STEMUP.CO.UK

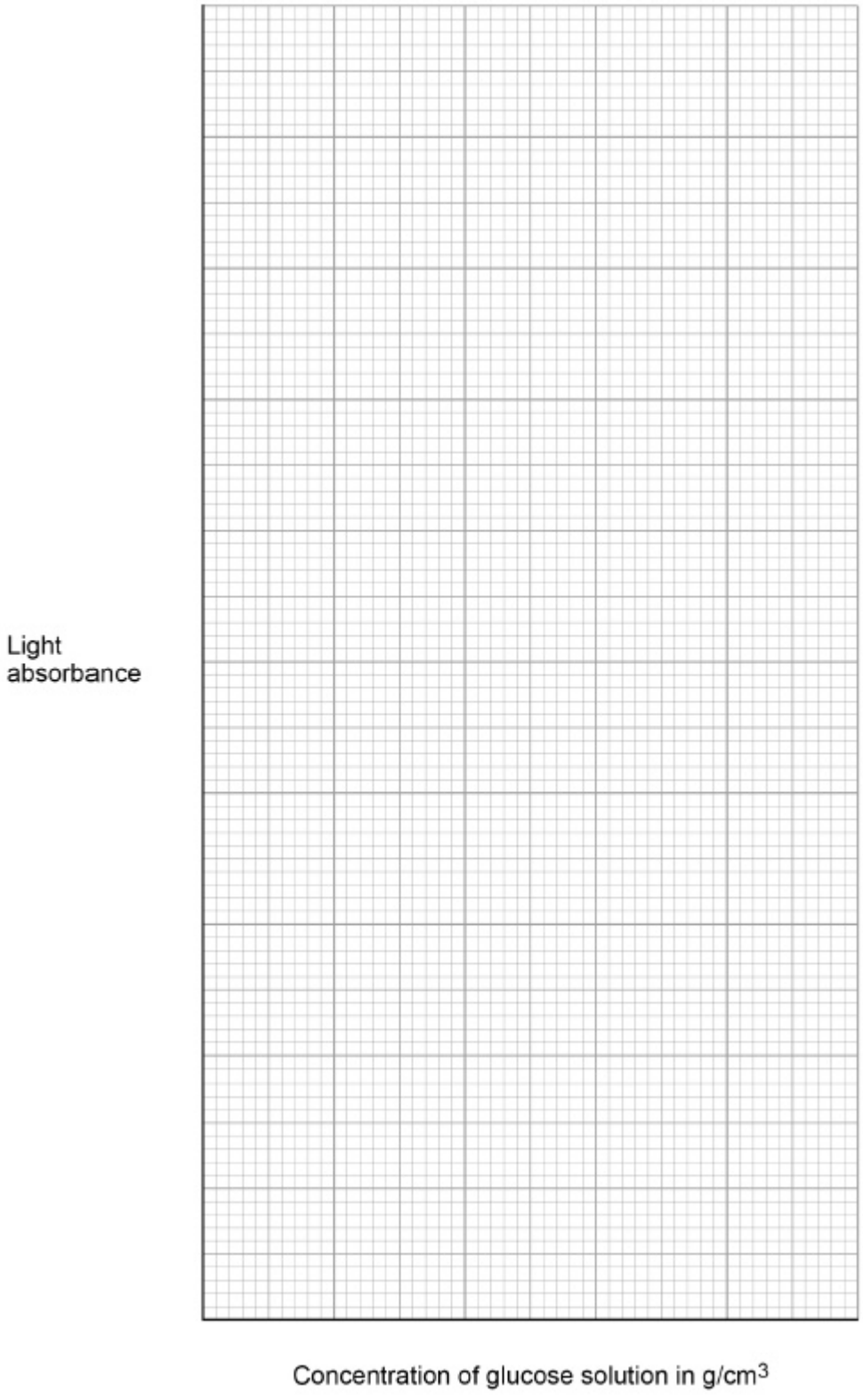
0.05	0.13
0.09	0.20
0.12	0.27
0.15	0.33

(a) Plot the data from **Table 1** on the grid.

You should:

- add suitable scales
- draw a line of best fit.

STEMUP.CO.UK



(4)

(b) Explain why more light is absorbed when the concentration of glucose is higher.

_____

_____

_____

STEMUP.CO.UK

(2)

The students repeated the method using two drinks instead of the glucose solutions.

Table 2 shows their results.

Table 2

Drink	Light absorbed in arbitrary units
X	0.25
Y	0.40

(c) Determine the concentration of glucose in drink **X**.

Use **Table 2** and your graph.

Concentration of glucose in drink **X** = _____ g/cm^3

(1)

(d) After a person consumes drink **Y** there is a change in blood glucose concentration.

Describe how the person's body will detect and respond to the change in blood glucose concentration.

(4)

(e) Recent research into diabetes suggests that blocking glucagon secretion can prevent high blood glucose levels.

Explain how blocking glucagon secretion could keep blood glucose levels in the normal range.

STEMUP.CO.UK

_____

_____

_____

_____

(2)

A new treatment for people with Type 1 diabetes could be available in the future.

The new treatment involves using stem cells from an adult donor.

The stem cells are stimulated to become insulin secreting cells.

(f) Where in the donor's body could stem cells come from?

_____

(1)

(g) Suggest **three** possible advantages of using stem cells to treat diabetes compared with the use of insulin injections.

1. _____

_____

2. _____

_____

3. _____

_____

(3)

(h) Some people are worried about the use of stem cells to treat diabetes.

Suggest **two** possible disadvantages of using stem cells to treat diabetes compared with the use of insulin injections.

1. _____

_____

2. _____

_____

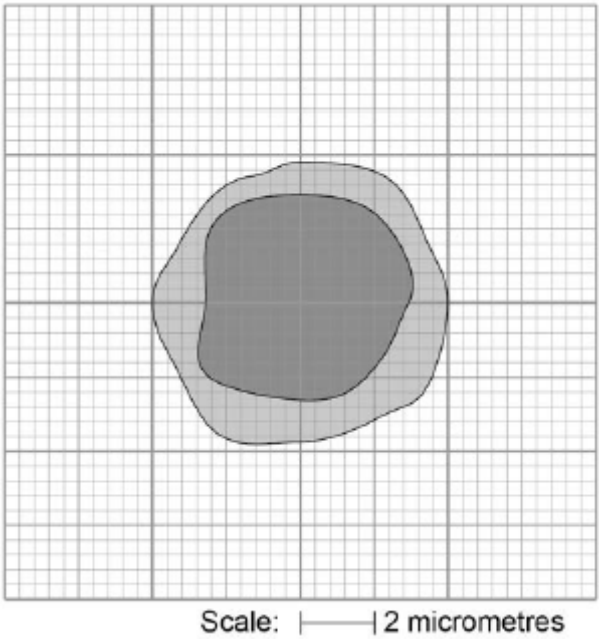
(2)

(Total 19 marks)

Q23.

The figure below shows a scale drawing of one type of cell in blood.

STEMUP.CO.UK



(a) Use the scale to determine the width of the cell.

Give your answer to the nearest micrometre.

_____

_____

Width of cell = _____ micrometres

(1)

(b) Complete the table below.

Part of the blood	Function
	Carries oxygen around the body
	Protects the body against infection
Plasma	

(3)

(c) Platelets are fragments of cells.

Platelets help the blood to clot.

Suggest what might happen if the blood did **not** clot.

_____

_____

(1)

(Total 5 marks)

STEMUP.CO.UK

Q24.

When an organism grows, new cells are produced by cell division.

(a) What type of cell division happens to produce new body cells?

Tick **one** box.

Differentiation ☐

Meiosis ☐

Mitosis ☐

(1)

(b) Why can cancers grow very large?

Tick **one** box.

Cancer cells are specialised ☐

Cell division is slow ☐

Cell division is uncontrolled ☐

(1)

(c) Give **one** factor which increases the risk of getting cancer.

_____

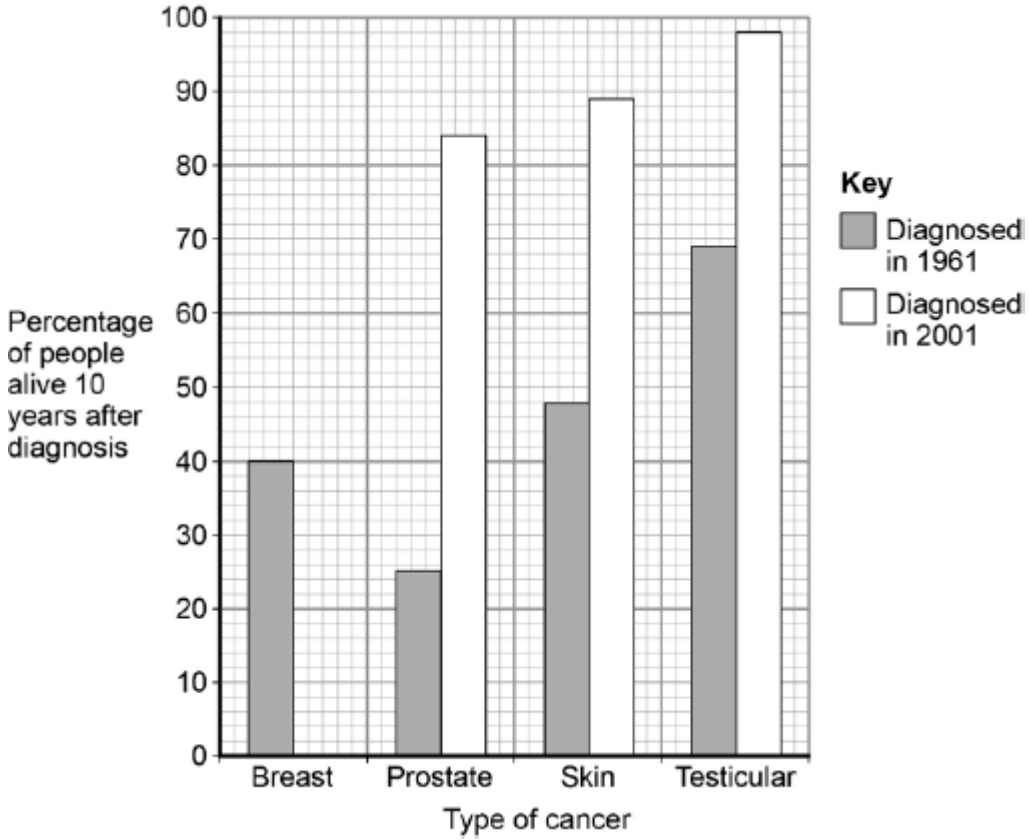
(1)

(d) Survival rates for people with cancer have improved a lot.

People who are alive 10 years after diagnosis are usually considered to be cured.

The figure below shows data for people diagnosed with cancer in 1961 and 2001.

STEMUP.CO.UK



78% of people diagnosed with breast cancer in 2001 were alive 10 years later.

Complete the figure above to show this information.

(1)

(e) Which type of cancer diagnosed in 1961 had the highest survival rate?

Tick **one** box.

Breast ☐

Prostate ☐

Skin ☐

Testicular ☐

(1)

(f) Which type of cancer shows the biggest improvement in the percentage of people alive after 10 years?

Tick **one** box.

Breast ☐

STEMUP.CO.UK

Prostate ☐

Skin ☐

Testicular ☐

(1)

(g) Suggest **two** reasons why the survival rates for all cancers have increased.

1. _____

_____

2. _____

_____

(2)

(Total 8 marks)

Q25.

Amylase is an enzyme that digests starch.

A student investigated the effect of pH on the activity of amylase.

This is the method used.

1. Mix amylase solution and starch suspension in a boiling tube.
2. Put the boiling tube into a water bath at 25 °C.
3. Remove a drop of the mixture every 30 seconds and test it for the presence of starch.
4. Repeat the investigation at different pH values.

The table below shows the students' results.

pH	Time when no starch was detected in minutes
5.0	7.0
5.5	4.5
6.0	3.0
6.5	2.0
7.0	1.5
7.5	1.5
8.0	2.0

STEMUP.CO.UK

(a) The student concluded pH 7.25 was the optimum pH for the amylase enzyme.

This is **not** a valid conclusion.

Suggest **two** reasons why.

1. _____

_____

2. _____

_____

(2)

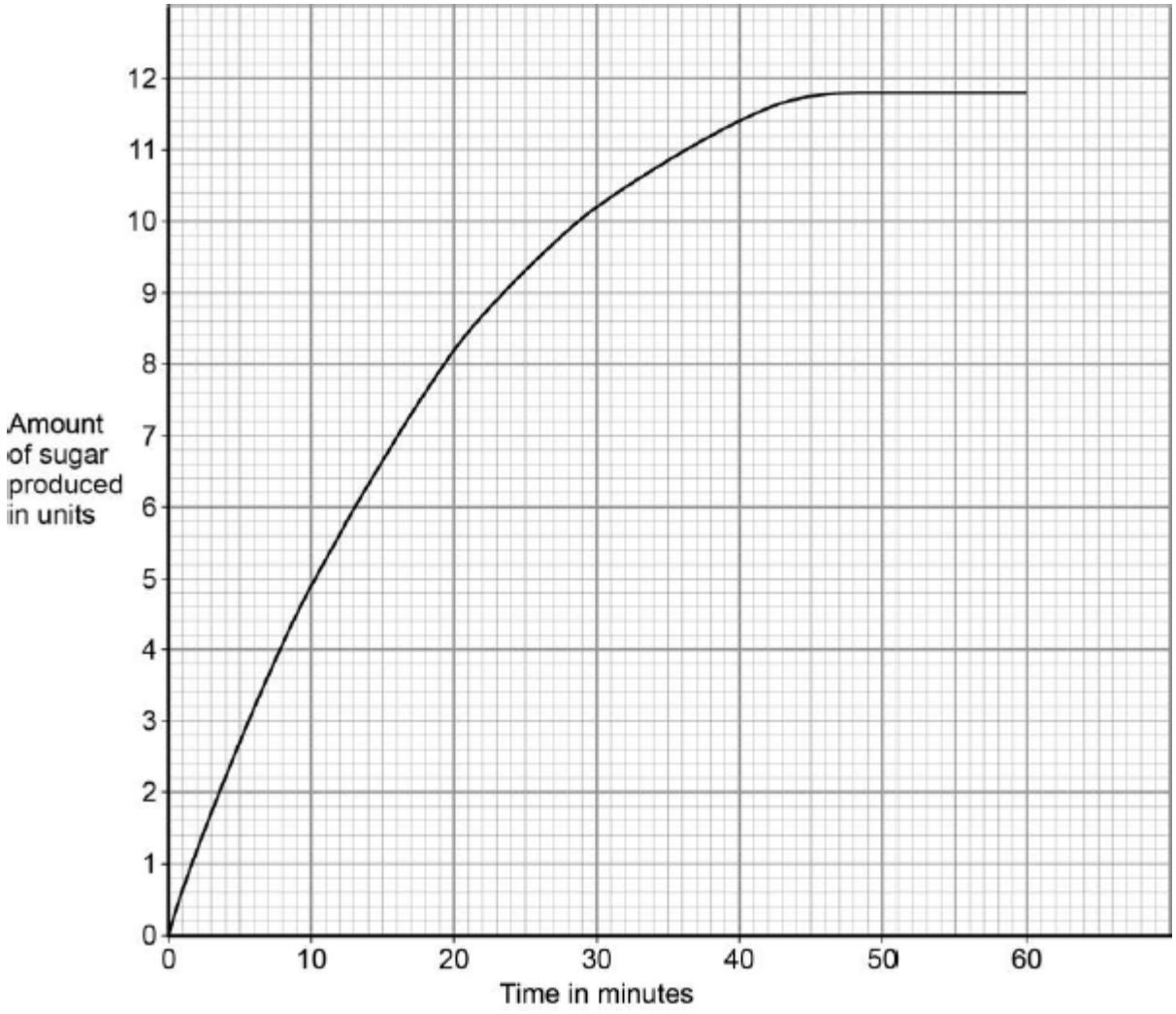
(b) The student did another investigation.

This is the method used.

1. Put amylase solution and starch suspension into a boiling tube.
2. Make the pH 7.25.
3. Put the boiling tube into a water bath at 25 °C.
4. Measure the amount of sugar produced every 30 seconds.

The results are shown in the figure below.

STEMUP.CO.UK



Calculate the mean rate of sugar produced per minute during the first 5 minutes.

_____

_____

Mean rate = _____ units per minute

(2)

(c) Iodine solution is added to a sample taken from the boiling tube after 10 minutes and 60 minutes.

Suggest what you would see in these samples.

After 10 minutes _____

_____

.After 60 minutes _____

_____

(2)

(d) The scientist repeated the investigation at 37 °C.

STEMUP.CO.UK

Draw a line on the figure above to show the predicted results.

(2)

(Total 8 marks)

Q26.

Malignant tumours are called cancers.

(a) Describe how a tumour can spread to different parts of the body.

_____

_____

_____

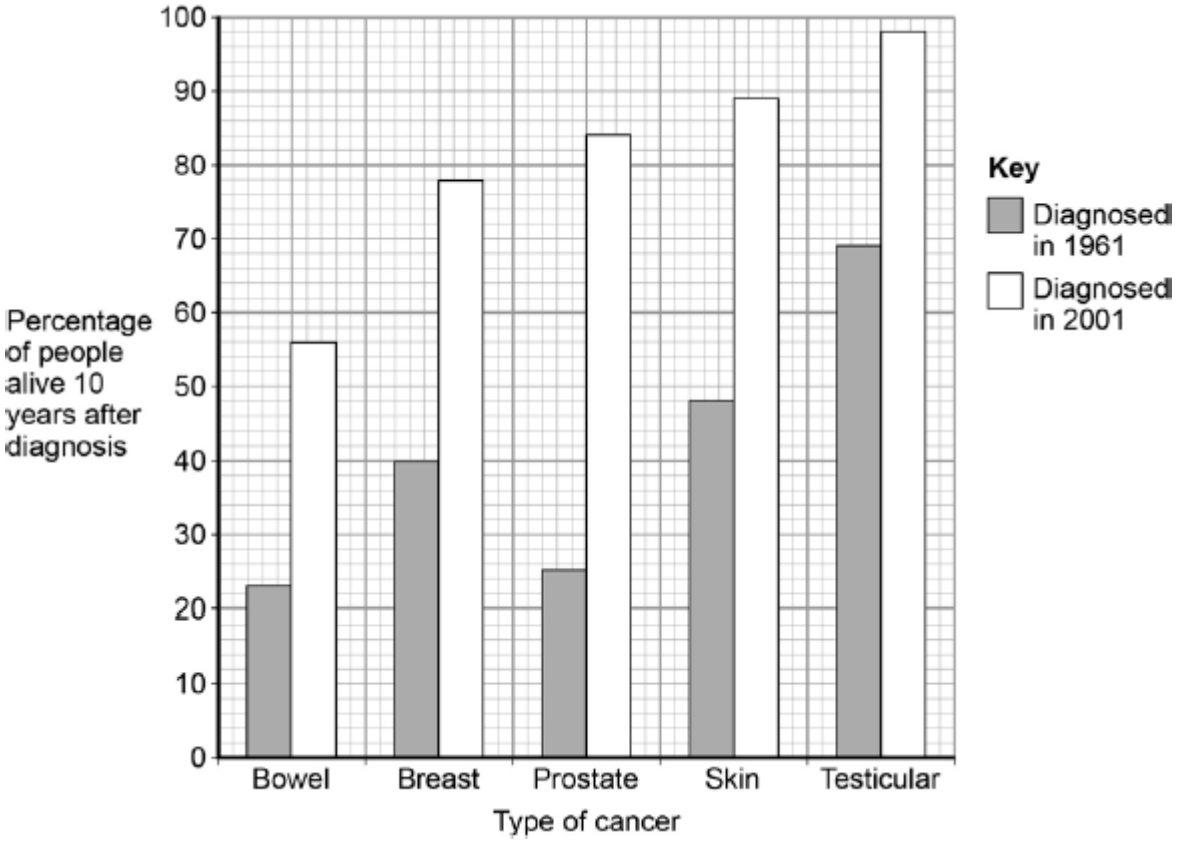
_____

(2)

(b) Survival rates for people with cancer have improved a lot.

Some people who are alive 10 years after diagnosis are considered to be cured.

The figure below shows data for people diagnosed with cancer in 1961 and 2001.



Look at the data in the figure above for skin cancer.

Calculate the percentage increase in the survival rate of people diagnosed with skin cancer in 1961 compared to 2001.

Give your answer to **three** significant figures.

STEMUP.CO.UK

Survival rate increase = _____ %

(2)

(c) Look at the data in the figure above for bowel and prostate cancer.

Compare the survival rates for bowel and prostate cancer.

Suggest reasons for the comparisons you have made.

(4)

(Total 8 marks)

Q27.

(a) Blood is made up of four main components.

Red blood cells and white blood cells are two of these components.

Describe the functions of the **two** other components of blood.

(2)

(b) The heart is often described as a **double pump**.

Describe why.

STEMUP.CO.UK

_____

_____

(1)

(c) In coronary heart disease (CHD) layers of fatty material build up inside the coronary arteries. This can cause a heart attack.

Statins and stents can be used to reduce the risk of a heart attack in people with CHD.

Evaluate the use of statins and stents in people with CHD.

Remember to include a justified conclusion.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(6)

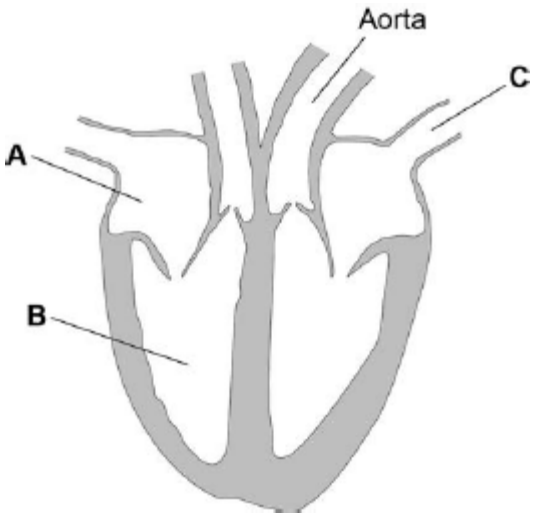
(Total 9 marks)

Q28.

Figure 1 shows a diagram of the human heart.

Figure 1

STEMUP.CO.UK



(a) Name parts **A** and **B**.

A _____

B _____

(2)

(b) What is the function of blood vessel **C**?

Tick **one** box.

To take blood from the heart around the body	☐
To take blood from the body to the heart	☐
To take blood from the heart to the lungs	☐
To take blood from the lungs to the heart	☐

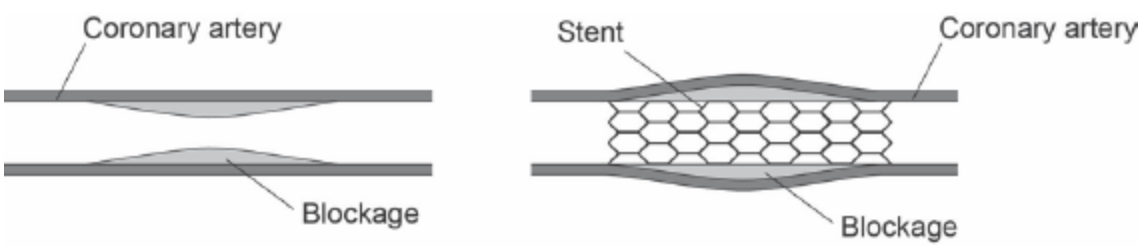
(1)

(c) Coronary heart disease (CHD) develops when layers of fatty material build up in the coronary artery.

One treatment for CHD is to insert a stent into the coronary artery.

Figure 2 shows a stent in a coronary artery.

Figure 2



STEMUP.CO.UK

Explain why the stent helps to prevent a heart attack.

(4)

(d) Look at the table below.

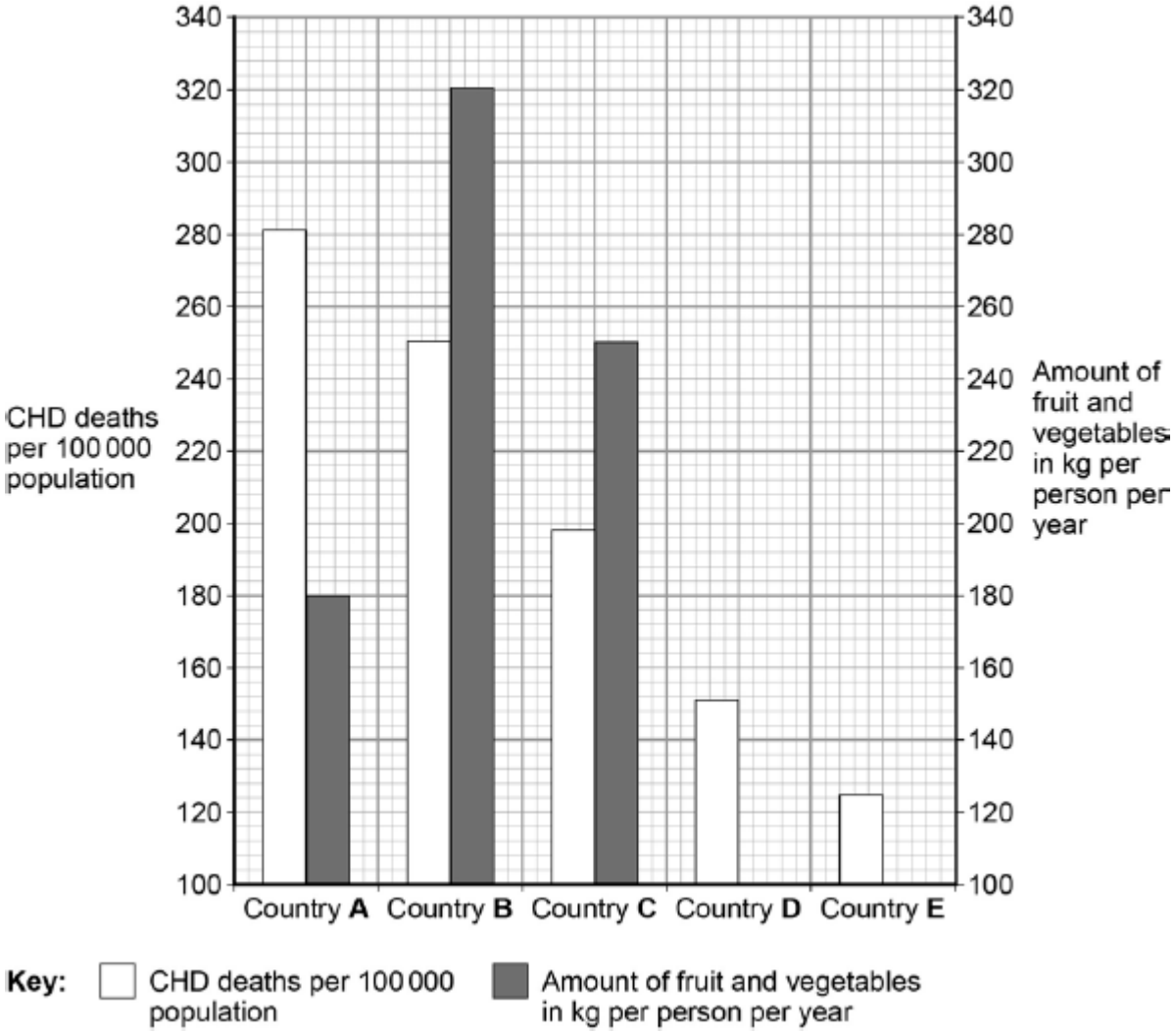
Country	Number of deaths from CHD per 100 000 population per year	Amount of fruit and vegetables eaten in kg per person per year
A	285	180
B	250	320
C	198	250
D	151	220
E	125	244

Plot the missing bars for countries **D** and **E** on **Figure 3**.

Use data from the table above.

Figure 3

STEMUP.CO.UK



(2)

(e) People in country **B** are more likely to die from CHD than people in country **E**.

How many more times as likely are people to die from CHD in country **B** than in country **E**?

_____

(1)

(f) A student concluded:

'The factor that causes CHD is not eating enough fruit and vegetables.'

Evaluate the student's conclusion.

Use data from **Figure 3**, and your own knowledge, in your answer.

_____

_____

_____

_____

STEMUP.CO.UK

_____

_____

_____

_____

_____

_____

(6)

(Total 16 marks)

Q29.

Statins are drugs used to treat coronary heart disease (CHD).

New drugs must be trialled before they can be licensed for use.

Some scientists trialled two different types of statin.

The scientists:

- conducted the trial on 325 patients with a history of CHD in their family
- used a double-blind trial method
- measured the change in blood cholesterol levels over two years
- measured the change in thickness of an artery wall over two years.

(a) During the trials the statins are tested for side effects.

Give **two** other reasons why the statins are trialled before use.

1. _____

_____

2. _____

_____

(2)

(b) Describe how the double-blind method is used in this trial.

_____

_____

_____

_____

(2)

(c) The results of drug trials are **peer reviewed** before they are published.

STEMUP.CO.UK

Why are peer reviews important in drug trials?

Tick **one** box.

To calculate the best dose	☐
To check the drug works	☐
To make sure the scientist gets credit	☐
To prevent false claims	☐

(1)

(d) The table below shows the results of the trial.

	Drug A	**Drug B**
Number of patients who died during the trial	1	2
Number of patients who reported aching muscles	16	17
Number of patients who reported mild abdominal cramps	18	16
Change in blood cholesterol level in percentage	–50.5	–41.2
Change in thickness of artery wall in mm	–0.0033	+0.032

Drug **A** is more effective than Drug **B**.

Give **two** reasons that support this conclusion.

Use information from the table above.

1. _____

_____

2. _____

_____

(2)

(e) A scientist concludes that Drug **A** is a safer drug than Drug **B**.

Give **two** reasons why this is **not** a valid conclusion.

STEMUP.CO.UK

(2)
(Total 9 marks)

Q30.

Coronary heart disease (CHD) can be caused by many factors.

The table below shows data related to CHD for five countries.

Country	Number of deaths from CHD per 100 000 population per year	Percentage of the population who smoke tobacco	Percentage of the population who drink alcohol heavily	Amount of fruit and vegetables eaten in kg per person per year
A	285	36	19	180
B	251	63	34	404
C	186	47	36	251
D	149	23	34	218
E	128	27	12	222

(a) Name **one** risk factor for CHD that is **not** shown in the table above.

(1)

(b) A student concludes that the main cause of CHD is not eating enough fruit and vegetables.

Give **three** reasons why the student's conclusion is **not** correct.

Use information from the table above.

(3)

STEMUP.CO.UK

(c) Explain how the build-up of fatty material can damage the heart.

(4)

(d) Describe how statins can help to reduce deaths from CHD.

(2)

(Total 10 marks)

Q31.

Blood sugar levels in the body are controlled by insulin.

(a) How does insulin travel around the body?

(1)

(b) The table below shows the blood sugar levels for two people after eating a meal.

Time after eating in hours	Blood sugar levels in mg per 100 cm^3 of blood	
	Person A	Person B
0	70	130
1	150	230

STEMUP.CO.UK

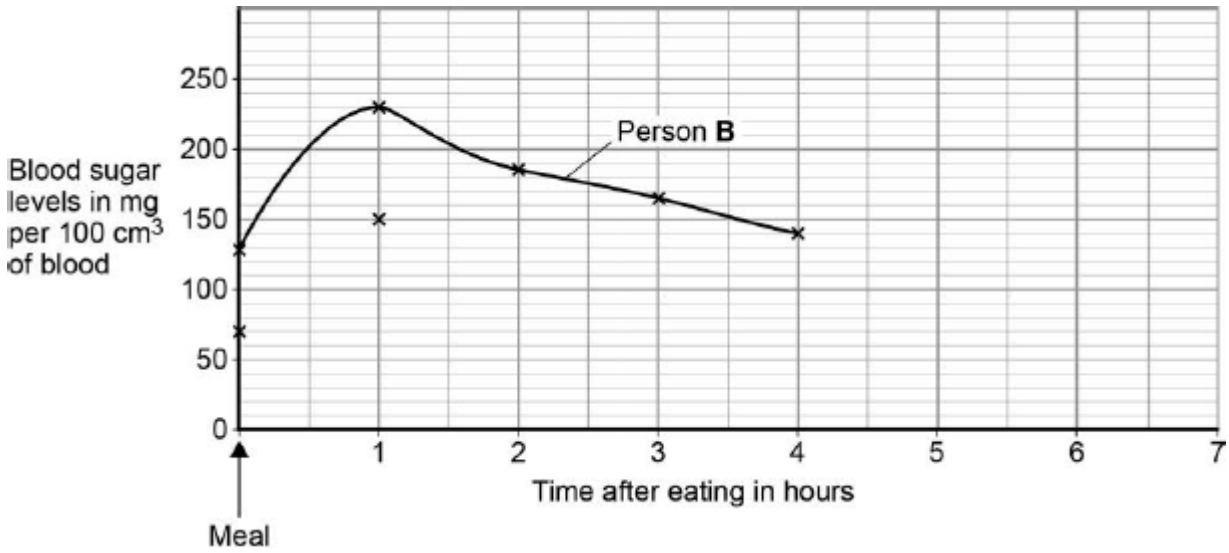
2	90	185
3	80	165
4	75	140

Use data from the table above to complete the graph in the figure below.

Plot the points for person **A**.

The first two points have been plotted for you.

Draw a line through all the points.



(3)

(c) How long after the meal is person **B**'s insulin production at its peak?

_____

_____

(1)

(d) What is the greatest **decrease** in the blood sugar level of person **B** in an hour?

_____

_____

_____

Decrease = _____ mg per 100 cm^3

(2)

(e) Estimate how long after eating the meal it will take for person **B**'s blood sugar level to return to the level before the meal.

Show your working on the figure above.

_____

STEMUP.CO.UK

_____

(2)

(Total 9 marks)

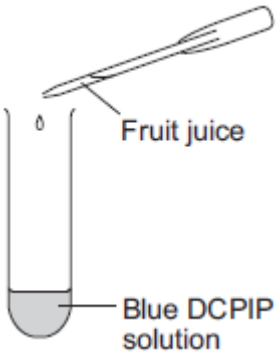
Q163.

Vitamin C is needed in the diet to prevent a deficiency disease called scurvy.

Fruits such as oranges contain vitamin C.

A group of students investigated the amount of vitamin C in four different fruit juices.

The method the students used is shown below.



DCPIP solution is blue. When vitamin C is added to DCPIP solution the blue colour disappears.

The mean results for the students are shown in the table.

Type of fruit juice	Mean number of drops of fruit juice needed to decolourise DCPIP solution
Apple	More than 30
Grapefruit	9
Orange	11
Lemon	6

(a) (i) What type of variable is the number of drops of fruit juice needed to decolourise the DCPIP solution?

_____

(1)

(ii) Give **one** conclusion that can be made from the results shown in the table above.

_____

_____

(1)

STEMUP.CO.UK

(b) (i) The food label on a carton of grapefruit juice states that 100 cm^3 of juice contains 25 mg of vitamin C.

The Recommended Daily Amount (RDA) of vitamin C for an adult is 80 mg.

What percentage of the recommended daily amount of vitamin C is provided by a 200 cm^3 serving of grapefruit juice?

_____

_____

_____ %

(1)

(ii) The RDAs for vitamins given on food packaging labels are only guideline values.

Suggest why the values are only guidelines.

_____

_____

(1)

(Total 4 marks)

Q164.

Total cholesterol in the blood contains 'good' and 'bad' cholesterol.
High levels of 'bad' cholesterol increase the risk of heart disease.
High levels of 'good' cholesterol reduce the risk of heart disease.

Scientists have suggested that chemicals called polyphenols in dark chocolate may help people with Type 2 diabetes.
Polyphenols may reduce high levels of 'bad' cholesterol in the blood.

The scientists investigated the effect of polyphenols on levels of cholesterol in the blood.

- 7 men and 5 women with Type 2 diabetes had the levels of cholesterol in their blood measured.
- They all ate 45 g of dark chocolate every day for 16 weeks.
- 6 of the people ate dark chocolate that contained polyphenols. The other 6 people ate dark chocolate that did not contain polyphenols.
- All 12 people were allowed to eat and drink anything else they wanted, but **no more** chocolate.
- The levels of cholesterol in their blood were measured again after 16 weeks.

The results showed that for the people who ate dark chocolate with polyphenols:

- there were decreases in total cholesterol and 'bad' cholesterol
- there was an increase in 'good' cholesterol.

STEMUP.CO.UK

A newspaper headline reported the research and wrote:

'Research shows that diabetics should eat dark chocolate.'

In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.

Was the newspaper's statement justified?

Include in your answer evidence that supports the newspaper's statement and evidence that does **not** support the newspaper's statement.

Remember to give a conclusion to your answer.

(Total 6 marks)

STEMUP.CO.UK