



Rewarding Learning

General Certificate of Secondary Education
2018–2019

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

Single Award Science: Biology

Unit 1



Foundation Tier

[GSA11]

GSA11

TUESDAY 14 MAY 2019, AFTERNOON

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all nine** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 60.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in Question 8.



- 1 (a) The table below shows the average daily amount of energy needed by male teenagers and male adults.

Group	Energy/kJ
teenagers	12 500
adults	10 200

- (i) Calculate how much more energy teenagers need compared to adults.

_____ kJ [1]

- (ii) Suggest **two** reasons why teenagers may need more energy than adults.

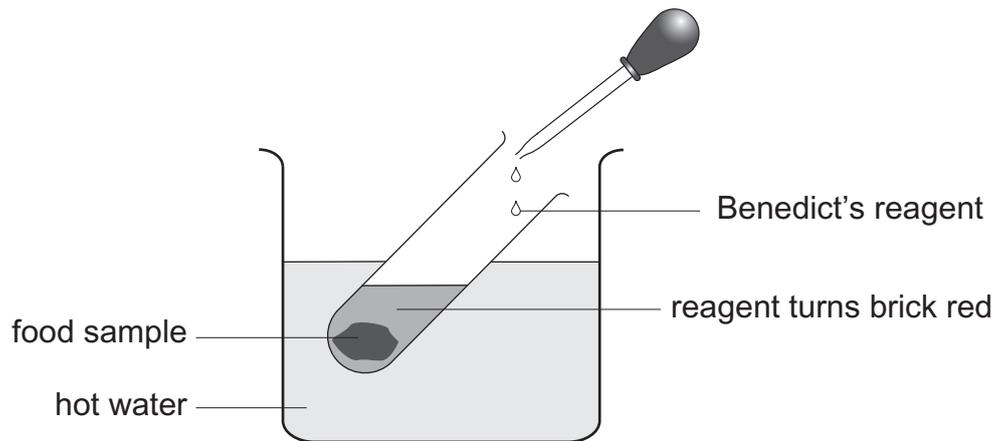
1. _____

2. _____

_____ [2]



The diagram below shows a food test being carried out on a sample of food.



Source: Principal Examiner

(b) Name the food type present in the sample being tested.

Choose from:

protein

fat

sugar

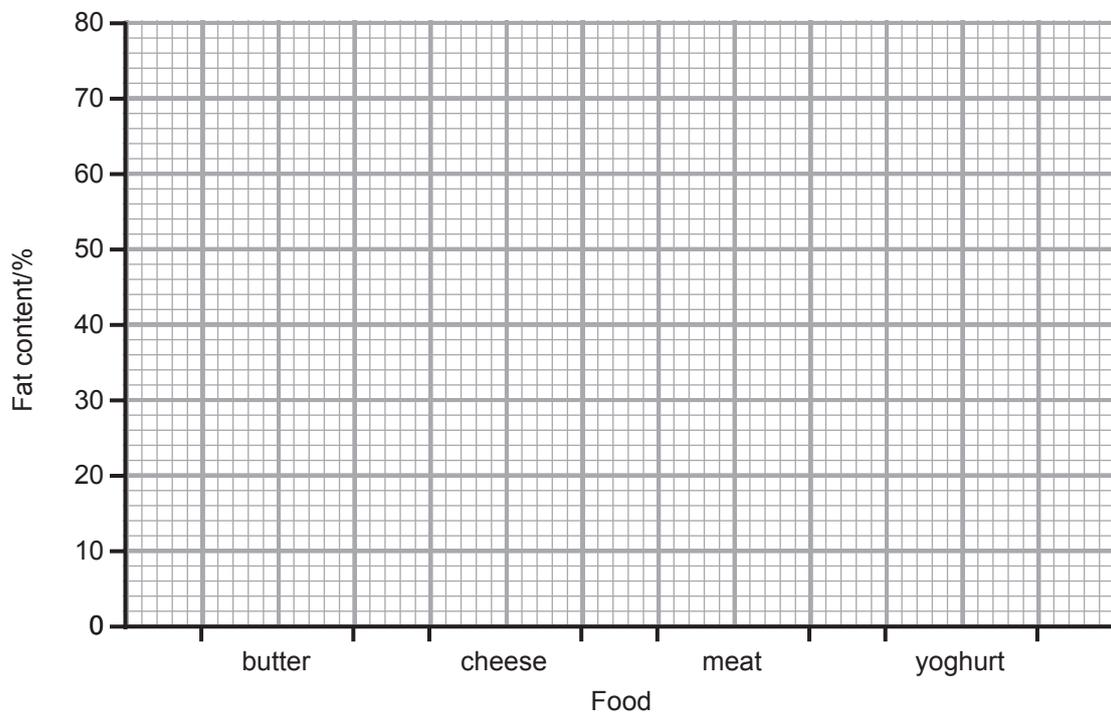
_____ [1]



(c) The table below shows the percentage of fat present in some foods.

Food	Fat content/%
butter	80
cheese	36
meat	20
yoghurt	12

(i) On the grid below draw a bar chart for this information.



[2]

We need some fat in our diet but too much fat increases the risk of heart disease.

(ii) To help avoid increasing the risk of heart disease, which food shown in the table should we **not** eat?

_____ [1]

(iii) Give **one** use of fat in the body.

_____ [1]





BLANK PAGE
DO NOT WRITE ON THIS PAGE
(Questions continue overleaf)

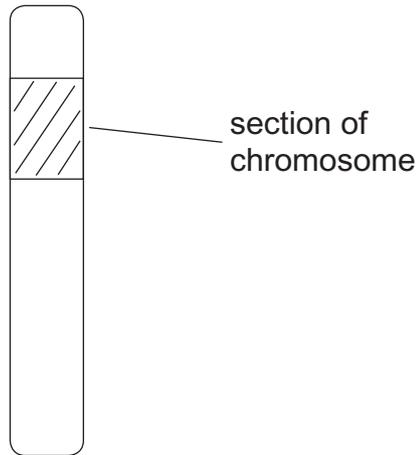
12221

[Turn over



24GSA1105

2 The diagram below shows a chromosome found in the nucleus of a cell.



(a) Complete the sentence below.

Choose from:

a gene : DNA : a genome

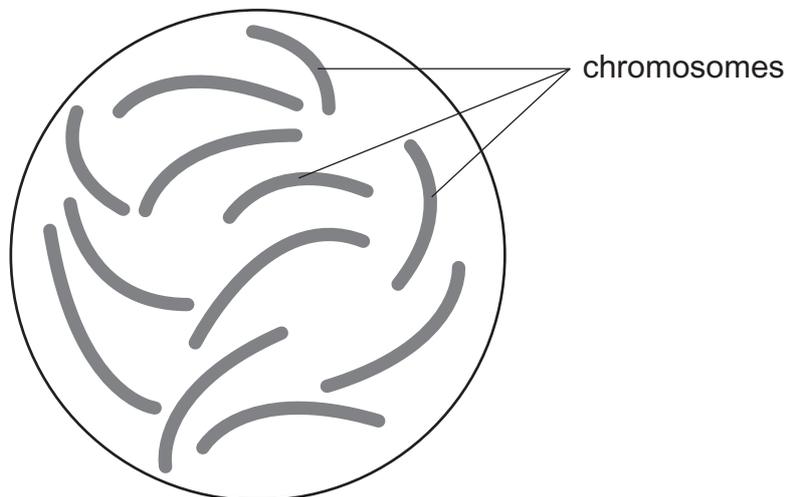
A section of chromosome is called _____ [1]



- (b) The table below shows the number of chromosomes in the cell nuclei of five different organisms.

Organism	Number of chromosomes
barley	14
pineapple	50
broad bean	12
human	46
hermit crab	254

The diagram below shows the number of chromosomes in a nucleus of a cell from one of these organisms.



- (i) Which organism named in the table does this cell nucleus come from?

_____ [1]

- (ii) A student thought that the more advanced an organism is the more chromosomes it will have. What evidence in the table shows this is **incorrect**?

 _____ [1]

[Turn over



- 3 The table below shows the height of some 15 year old students.

Student	Gender	Height/cm
1	female	115
2	female	118
3	female	116
4	female	110
5	female	112
6	male	121
7	male	127
8	male	128
9	male	122
10	male	131
Total height		1200

- (a) Using this information give **one** conclusion about the height of 15 year old males compared to 15 year old females.

_____ [1]

- (b) Calculate the average height of the students.
(Show your working out.)

Answer _____ cm [2]

- (c) There are two types of variation. Name the type of variation shown by height.

_____ [1]





BLANK PAGE
DO NOT WRITE ON THIS PAGE
(Questions continue overleaf)

[Turn over

12221



24GSA1109

4 (a) Cigarette smoke contains three harmful substances; nicotine, tar and carbon monoxide.

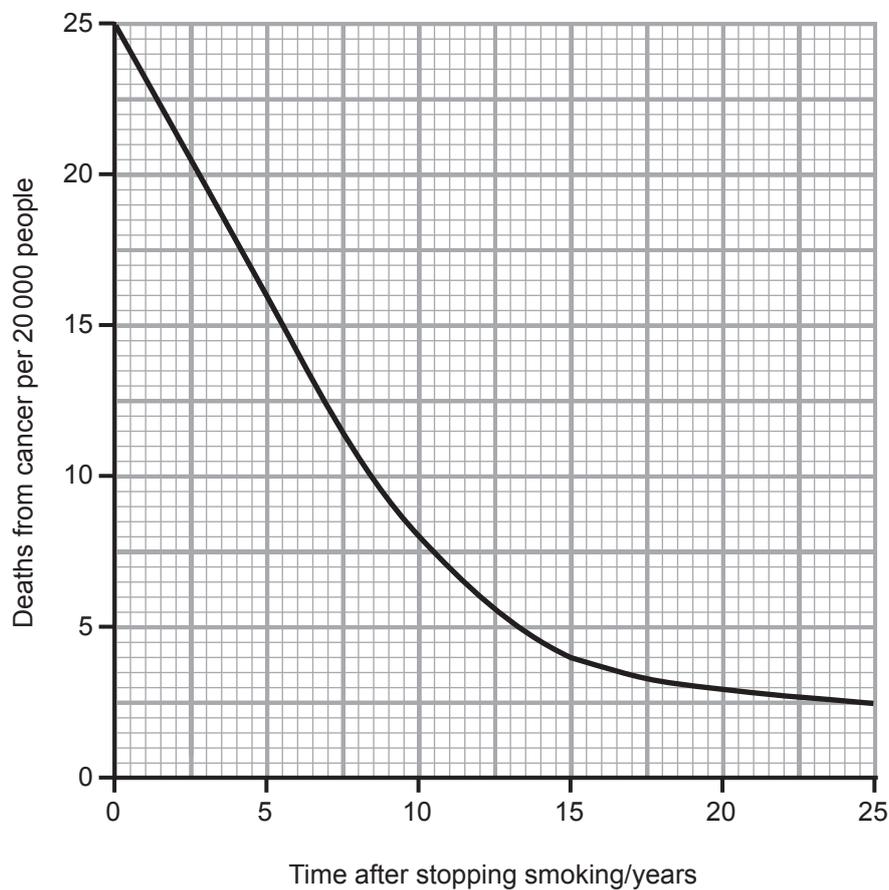
(i) Name **one** organ of the body affected by tar.

_____ [1]

(ii) Name the substance in cigarette smoke that is addictive.

_____ [1]

Many people stop smoking because they know it can cause cancer. The graph below shows the number of deaths from cancer in the years after stopping smoking.



(b) State the conclusion that can be made from this data.

_____ [1]



(c) A person's health can also be affected by drinking alcohol.

(i) Name the part of the body most likely to be damaged by drinking alcohol.

_____ [1]

(ii) State what is meant by the term **binge drinking**.

_____ [1]

[Turn over



5 (a) A change in lifestyle, for example by taking more exercise, can reduce the risk of heart disease.

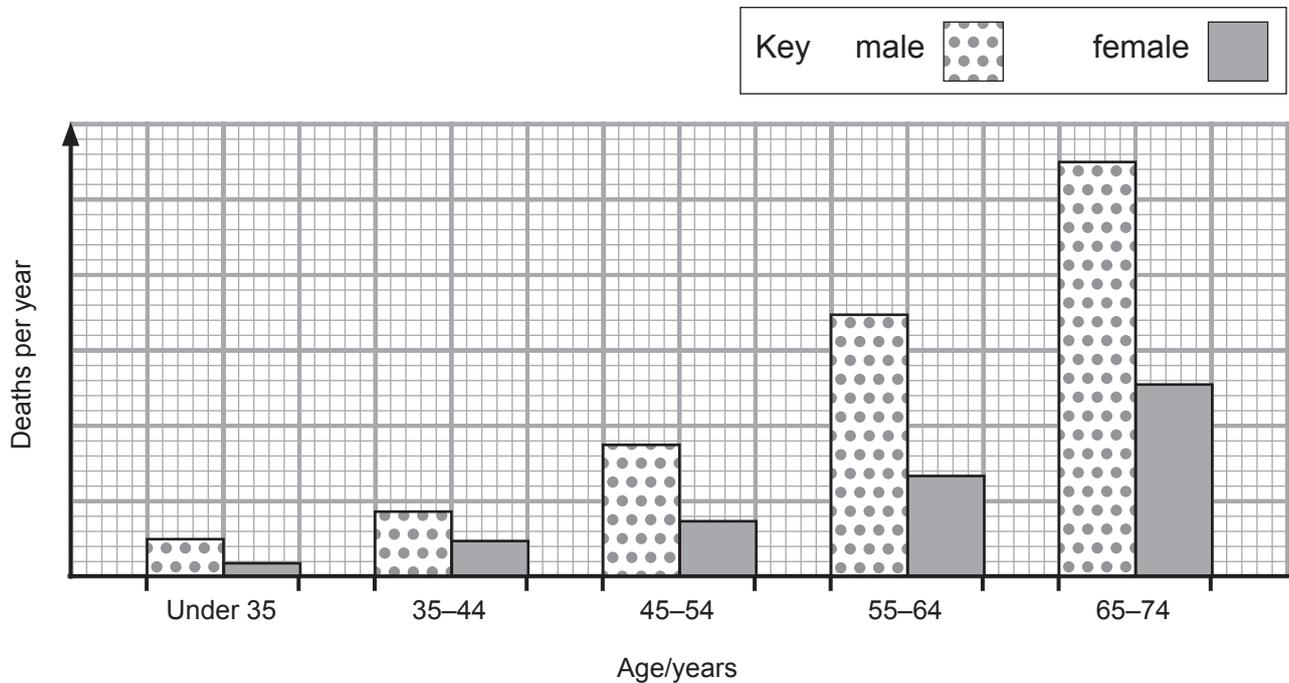
(i) State **one** other lifestyle change that can reduce the risk of heart disease.

_____ [1]

(ii) Suggest **one** reason why the cost of treating heart disease in the UK is so expensive.

 _____ [1]

The bar graph below shows the deaths per year caused by heart disease.



(b) Give **two** conclusions that can be made from this information.

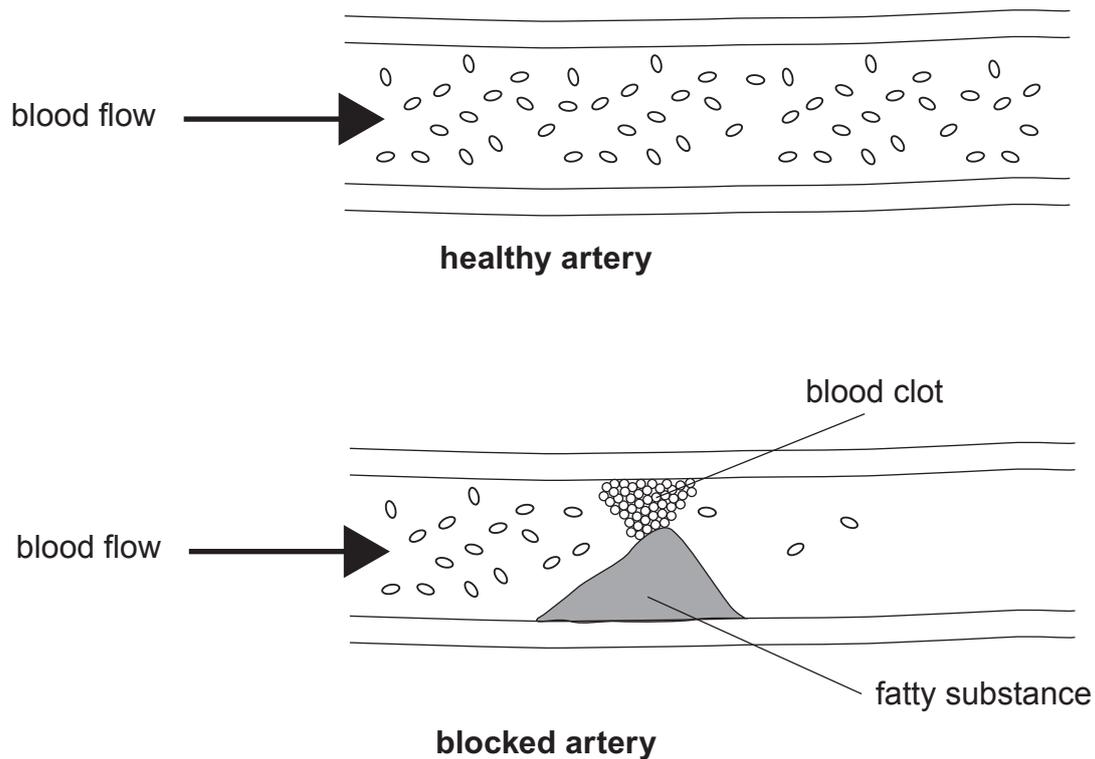
1. _____

2. _____

_____ [2]



(c) The diagrams below show a healthy and a blocked coronary artery.



Source: Principal Examiner

- (i) Name the fatty substance that builds up in the coronary artery to cause the blockage.

_____ [1]

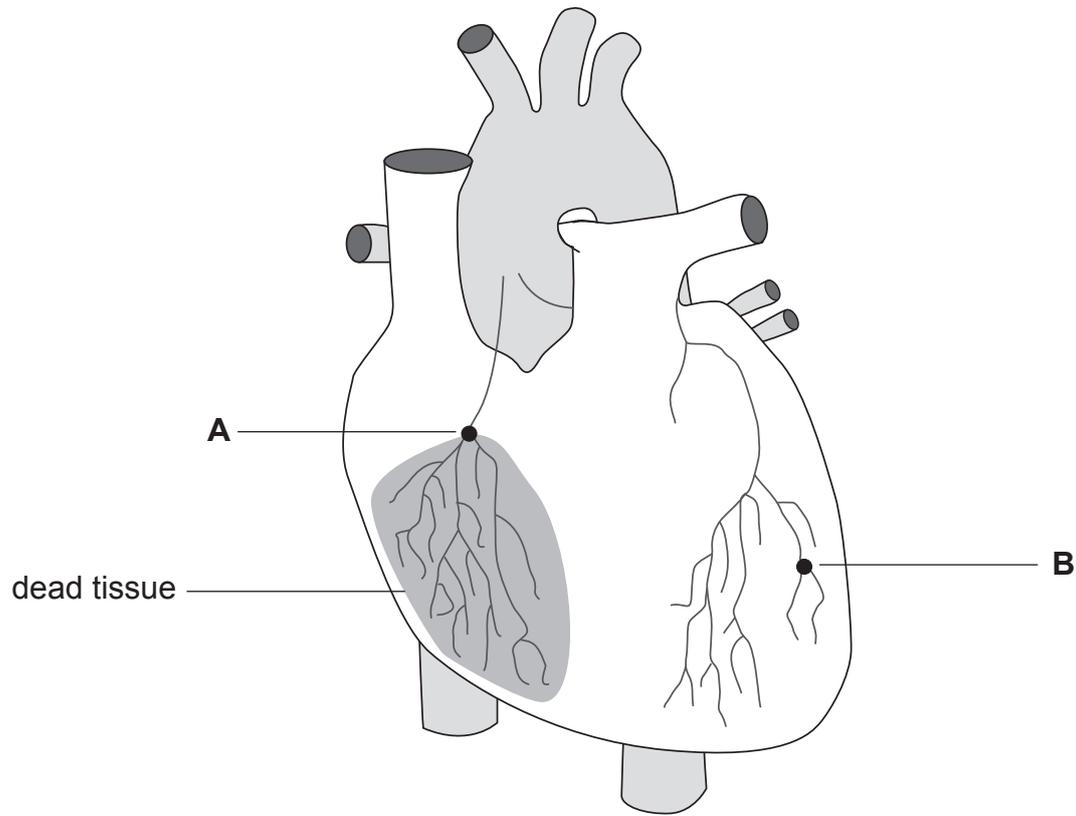
- (ii) What effect does the blockage in the coronary artery have on the blood flow?

 _____ [1]

[Turn over



The diagram below shows the heart of a person who suffered a mild heart attack. This was as a result of a blockage in the coronary artery at point **A**.



© CCEA

(d) On the diagram shade the area of dead tissue that would occur if the blockage was at point **B**. [1]





BLANK PAGE
DO NOT WRITE ON THIS PAGE
(Questions continue overleaf)

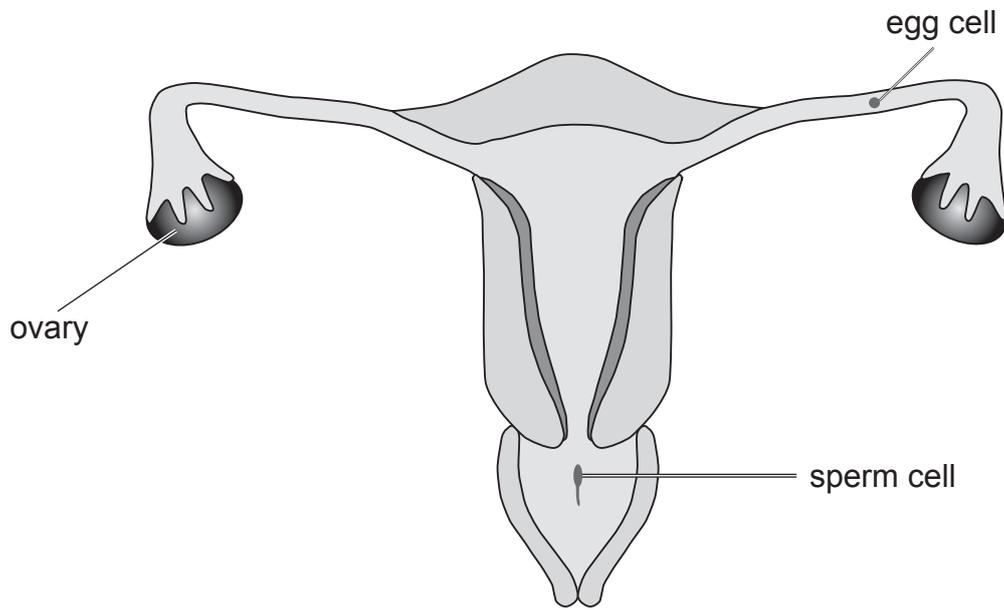
[Turn over

12221



24GSA1115

- 6 (a) The diagram below shows the female reproductive system. It also shows a sperm cell and an egg cell.



© CCEA

- (i) Name the three parts, in the correct order, that the sperm cell will travel through to reach and fertilise the egg cell.

vagina → _____ → _____ → _____ [3]

- (ii) On the diagram above place an **X** to show where a fertilised egg will usually be implanted. [1]

- (iii) Complete the following sentence.

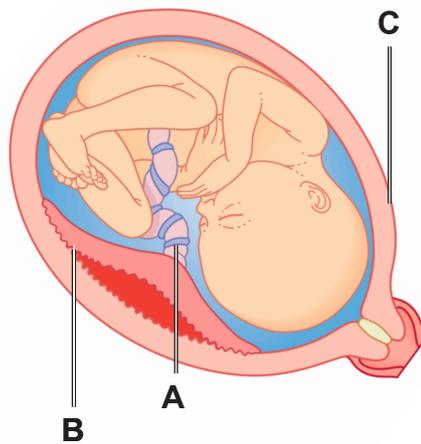
Choose from:

an embryo : **a foetus** : **a zygote**

The fertilised egg is called _____ . [1]



(b) The diagram below shows a developing baby in the uterus.



© Dorling Kindersley / Getty Images

(i) Which letter **A**, **B** or **C** shows the placenta?

_____ [1]

(ii) Name **one** substance that passes from the developing baby to the mother.

_____ [1]

(iii) Name **one** substance that passes from the mother to the developing baby.

_____ [1]

(c) Methods of contraception can be described as mechanical, surgical or chemical.

(i) Name **one** method of contraception which is described as chemical.

_____ [1]

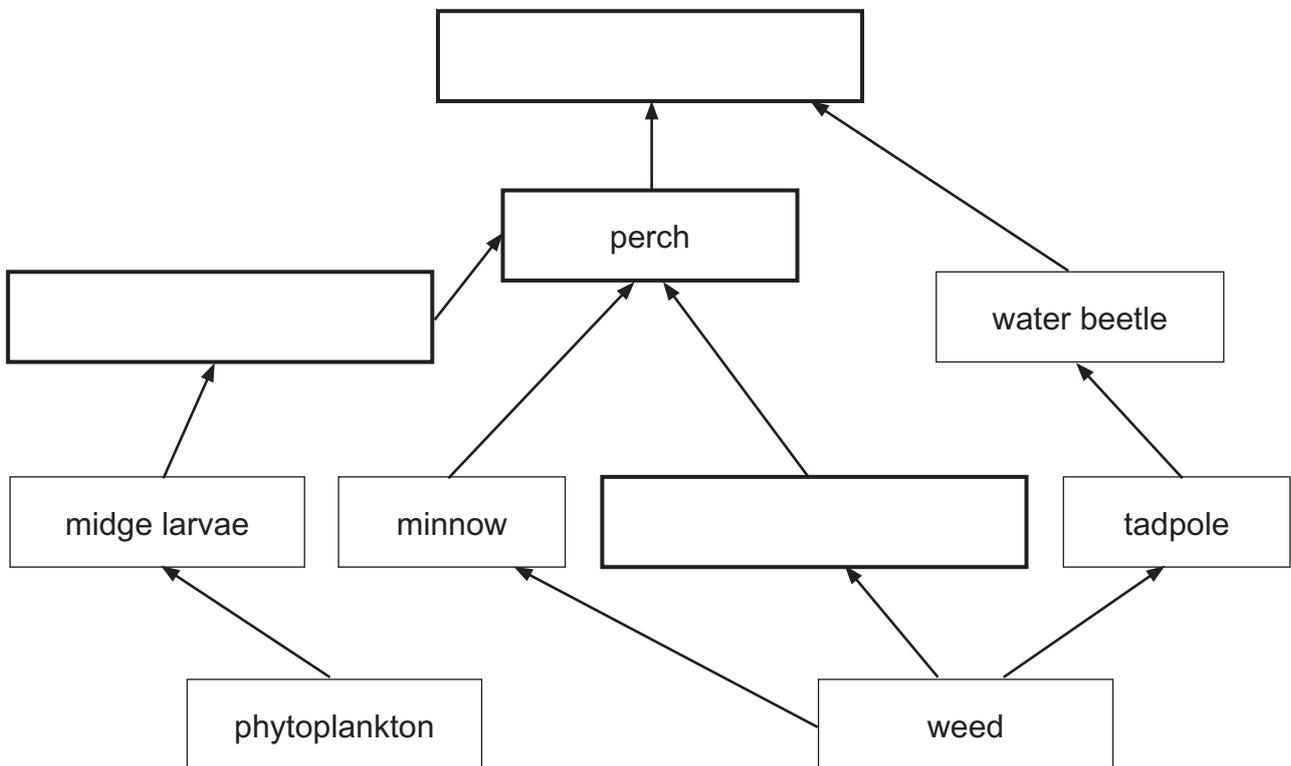
(ii) Suggest **one** reason why a doctor might refuse a surgical method of contraception to a twenty year old single woman.

 _____ [1]

[Turn over



7 (a) The diagram below shows part of a food web.



- (i) Use information from the table below to complete the food web. Write **one** animal name into each of the empty boxes. Perch has been done for you.

Animal	What the animal eats
perch	leech, minnow, mollusc
pike	perch, water beetle
mollusc	weed
leech	midge larvae

[2]

- (ii) What do the arrows in the food web represent?

[1]



- (iii) If the tadpoles were removed from this food web what effect, if any, would this have on the number of water beetles? Explain your answer.

[2]

- (b) The photograph below shows some lichen on a tree. Lichen is a biotic pollution monitor.



lichen

Source: Principal Examiner

- (i) What is meant by the term **biotic**?

[1]

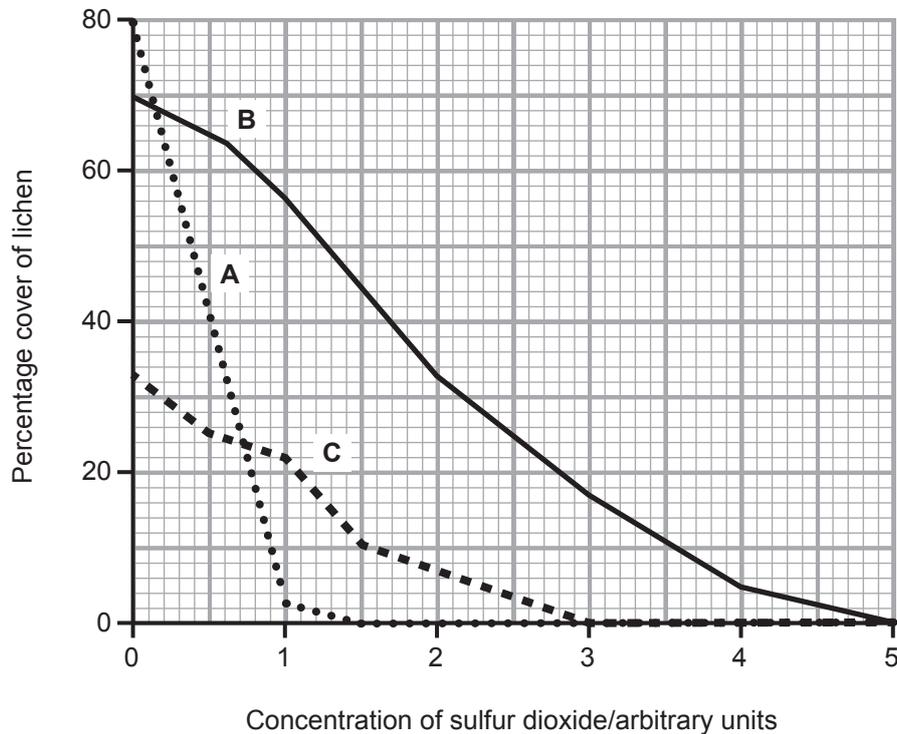
- (ii) Another way to monitor changes in the environment is to use an **abiotic** factor. Give one **abiotic** factor.

[1]

[Turn over



The graph below shows the percentage cover of three species of lichen (A, B and C) at different concentrations of sulfur dioxide.



Use the information from the graph to answer the following questions.

- (iii) What effect does the concentration of sulfur dioxide have on the percentage cover of lichen?

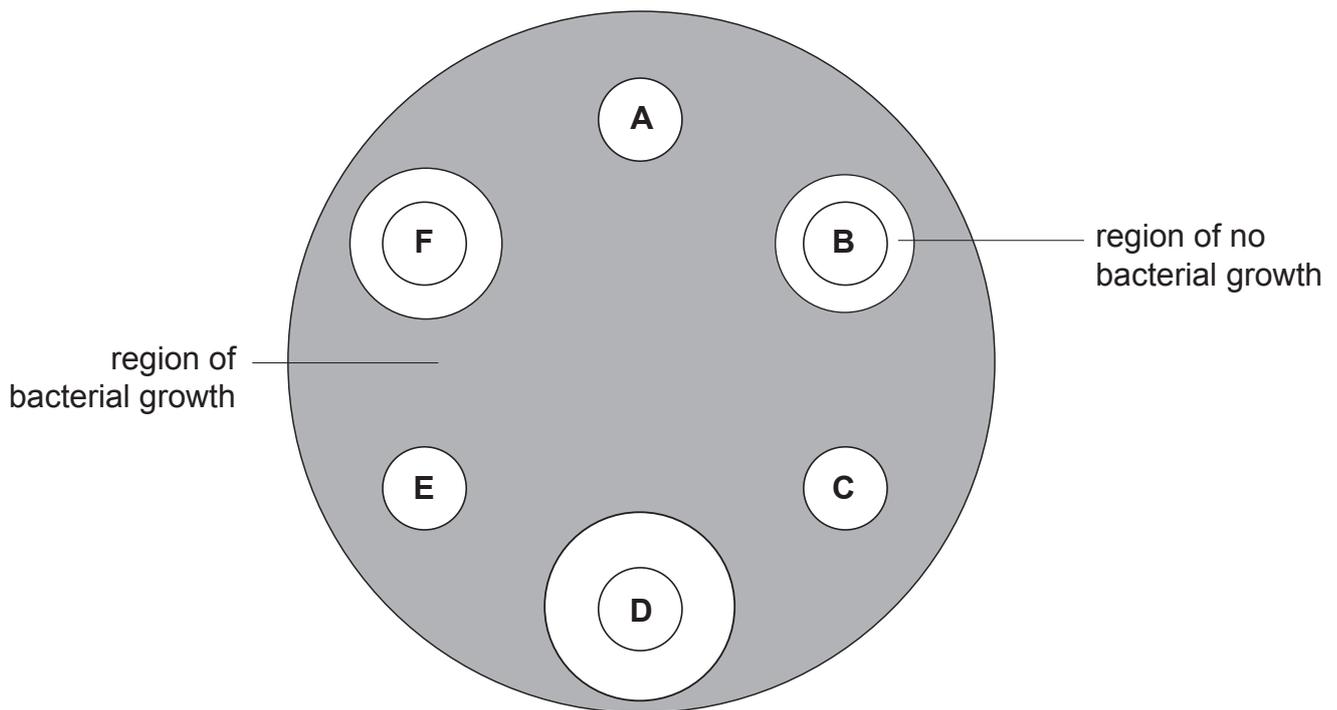
_____ [1]

- (iv) Which lichen (A, B or C) is the best indicator of the level of sulfur dioxide pollution? Explain your choice.

_____ [2]



9 The diagram below shows the effect of six antibiotics on bacterial growth.



Source: Principal Examiner

(a) Which antibiotic **A**, **B**, **C**, **D**, **E** or **F** is the most effective? Explain your answer.

[2]

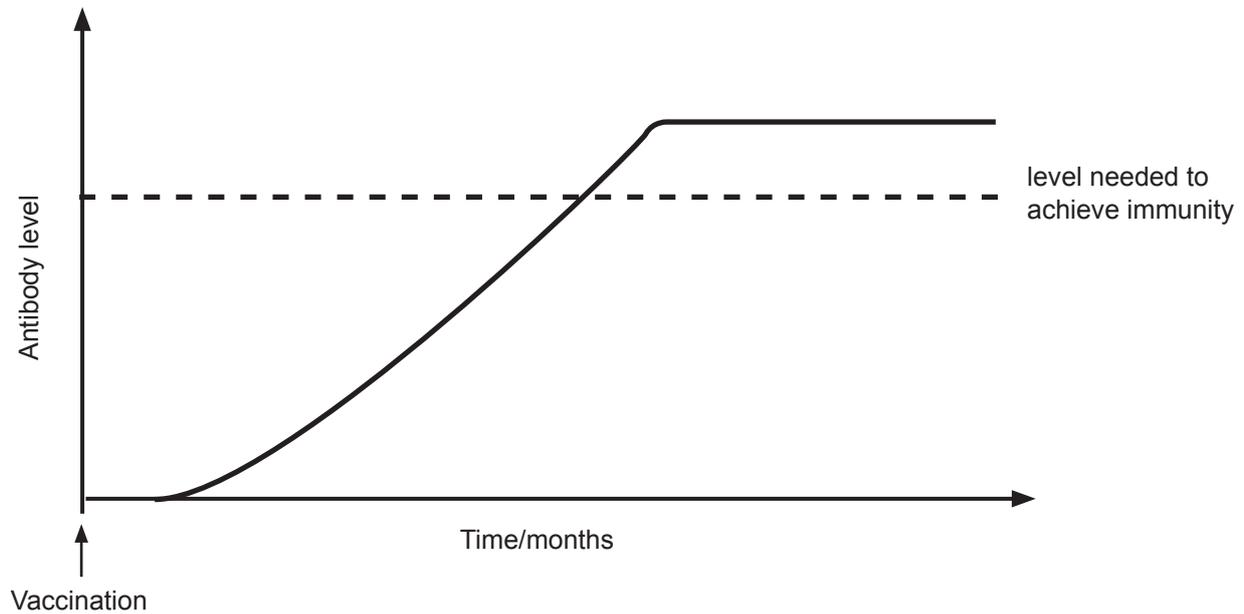
There are many different strains (types) of virus that cause flu, these can mutate easily making many new strains.

(b) Describe fully what is meant by the term **mutation**.

[2]



- (c) The graph below shows the effect of a flu vaccination on a person's antibody level.



- (i) The flu vaccine contains weakened microorganisms. Explain why the microorganisms are weakened.

_____ [1]

- (ii) Explain fully, using evidence from the graph, why the immunity achieved is active immunity.

 _____ [2]

THIS IS THE END OF THE QUESTION PAPER



DO NOT WRITE ON THIS PAGE

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total Marks	

Examiner Number

Permission to reproduce all copyright material has been applied for.
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA will be happy to rectify any omissions of acknowledgement in future if notified.

12221

