Centre No.						Surname	Initial(s)
Candidate No.						Signature	

Paper Reference(s)

4325/1F

Examiner's use only

Team Leader's use only

London Examinations IGCSE

Biology

Paper 1F

Foundation Tier

Tuesday 8 November 2005 – Morning

Time: 1 hour 30 minutes

Question Number	Leave Blank
1	
2	
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14	
15	
16	
Total	

Materials required for examination
Nil

Items included with question papers
Nil

Instructions to Candidates

In the boxes above, write your centre number and candidate number, your surname, initial(s) and signature.
The paper reference is shown at the top of this page. Check that you have the correct question paper.
Answer **ALL** the questions in the spaces provided in this question paper.
Show all the steps in any calculations and state the units.
Calculators may be used.

Information for Candidates

The total mark for this paper is 100. The marks for the parts of questions are shown in round brackets: e.g. (**2**).
There are 24 pages in this question paper. All blank pages are indicated.

Advice to Candidates

Write your answers neatly and in good English.

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Turn over

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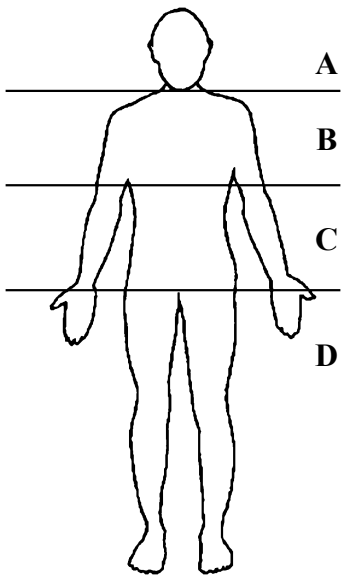
Leave blank

1. For each question, (a) to (j), choose the best answer, **A**, **B**, **C** or **D** and write it in the box.

(a) The diagram shows the outline of a human. In which part are the kidneys found?



(1)

(b) The organism used in the making of beer is a

A bacterium
B flowering plant
C fungus
D virus

(1)

(c) Human males produce sex cells called

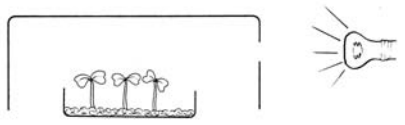
A sperm
B pollen
C ovules
D eggs

(1)

Leave blank

(d) The diagram shows small plants that were put under a box with a light shining from one side.

At start



A **B** **C** **D**

Which diagram shows what the plants looked like after two days?

(1)

(e) Seeds germinate best in soil that is

A dry and cold
B moist and cold
C dry and warm
D moist and warm

(1)

(f) The list shows substances that may be found in rivers.

sewage
nitrate
oxygen

How many of the substances in the list can cause pollution?

A 0
B 1
C 2
D 3

(1)

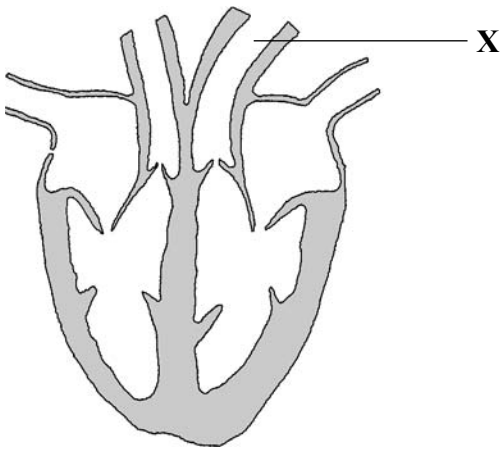
Leave blank

(g) Transpiration is the loss of

A water from a plant leaf
B energy from cells
C heat from the skin
D urine from the bladder

(1)

(h) The diagram shows a section through the human heart.

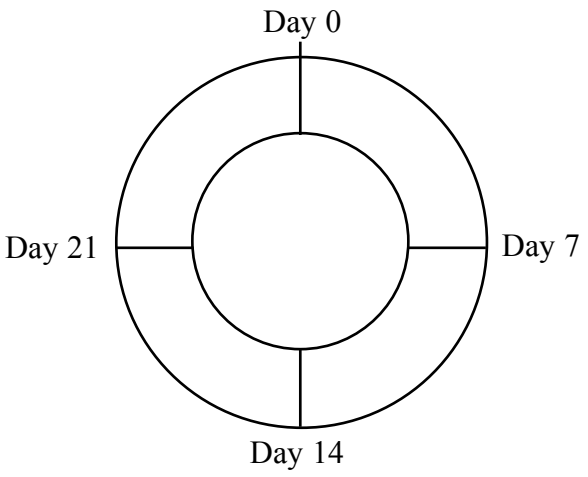


The letter **X** labels the

A right atrium
B aorta
C left ventricle
D right ventricle

(1)

(i) The diagram shows a 28-day menstrual cycle, starting at day 0.



When is an egg released from the ovary?

A day 0
B day 7
C day 14
D day 21

(1)

Leave blank

(j) Which shows a correct single step in the carbon cycle?

A carbon dioxide in air → carbon compounds in animals

B carbon dioxide in air → carbon compounds in plants

C carbon dioxide in air → carbon compounds in air

D carbon dioxide in air → carbon compounds in decomposers

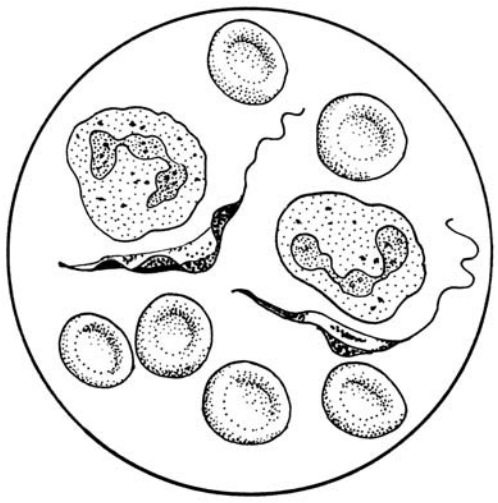
(1)

(Total 10 marks)

Q1

Leave blank

2. The diagram shows a sample of blood seen using a microscope. The blood was from a person suffering from a disease caused by a microorganism.



(a) How many red blood cells can be seen in the diagram?

.....

(1)

(b) The microorganism feeds on substances in blood plasma.

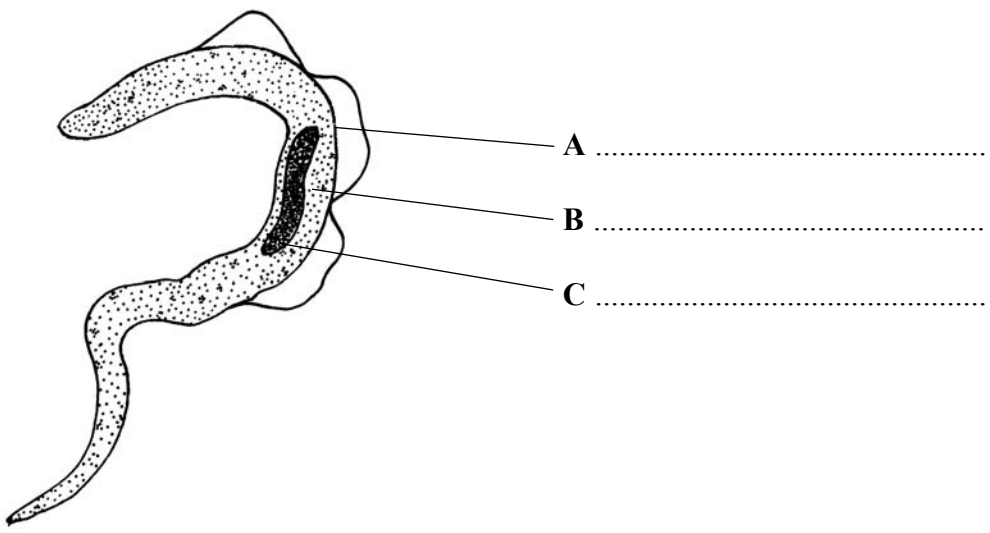
Suggest **two** substances, in blood plasma, that the microorganism would use as food.

1 .....

2 .....

(2)

(c) The diagram shows the microorganism. Name parts **A**, **B** and **C** of this cell on the lines provided.



(3)

Q2

(Total 6 marks)

Leave blank

3. (a) The table lists types of cell found in the human body.

Complete the table by writing the number of chromosomes found in each cell.

The first one has been done for you.

Name of cell	Number of chromosomes in cell
neurone	46
sperm	
red blood cell	
skin	

(3)

(b) Sperm cells are needed for fertilisation.

(i) In what part of the body are sperm cells made?

.....

(1)

(ii) Name the other type of cell involved in fertilisation.

.....

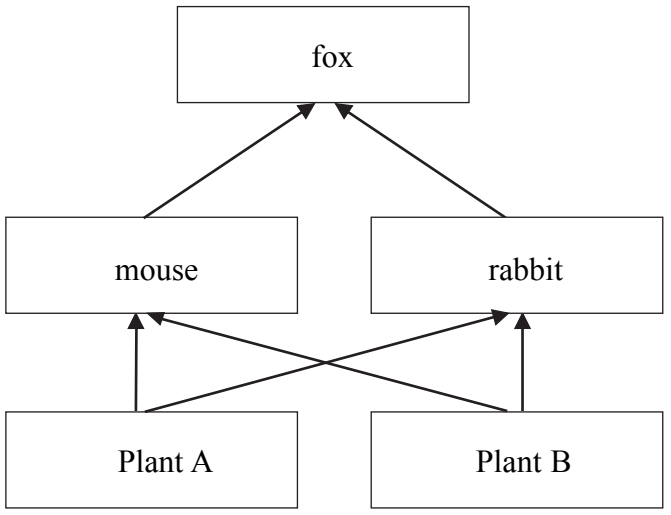
(1)

(Total 5 marks)

Q3

Leave blank

4. The diagram shows a food web.



(a) Use the information in the food web to complete each sentence in the table below with a number.

The first has been done for you.

Sentence	Number
The number of organisms is	5
The number of producers is	
The number of animals is	
The number of food chains is	

(3)

(b) A disease caused by a virus killed the rabbits in this food web. Use this information to complete the sentences below.

(i) The number of foxes is likely to .....

(1)

(ii) The number of mice is likely to .....

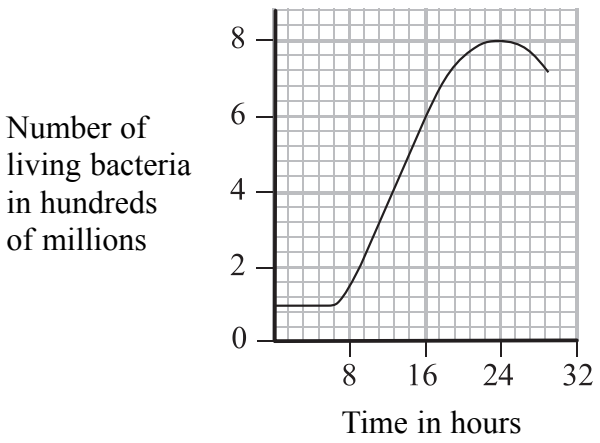
(1)

Q4

(Total 5 marks)

Leave blank

5. Genetically modified (GM) bacteria can be grown in a large container called a fermenter. The graph shows the numbers of live GM bacteria in a fermenter over 32 hours.



(a) (i) How many hours did it take to produce 600 million bacteria?

.....

(1)

(ii) What was the highest number of living bacteria in the fermenter?

.....

(1)

(iii) How many GM bacteria were in the fermenter at the start?

.....

(2)

(iv) Put an **X** on the graph to show when the bacteria are reproducing fastest.

(1)

(v) Suggest **two** reasons why the number of living GM bacteria fell after 24 hours.

1 .....

2 .....

(2)

(b) GM bacteria can be used to make a human hormone.
Which of the hormones in the box helps lower blood glucose levels and can be made by GM bacteria?

adrenaline	**insulin**	**testosterone**	**oestrogen**

.....

(1)

Q5

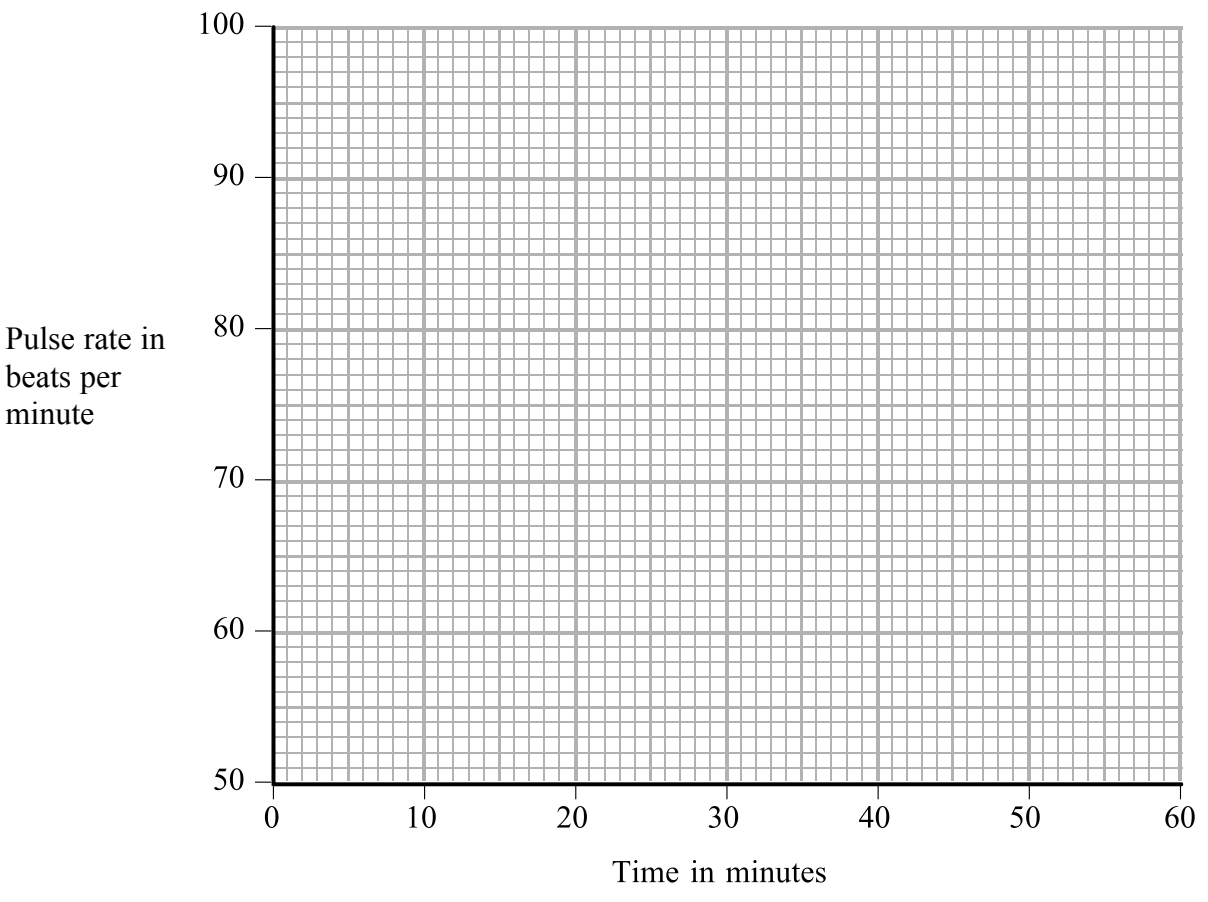
(Total 8 marks)

Leave blank

6. A person sat down to rest for one hour. Twenty minutes after sitting down the person smoked a cigarette. The table shows the pulse rate of the person every 10 minutes during this hour.

Time in minutes	Pulse rate in beats per minute
0	65
10	65
20	65
30	95
40	85
50	75
60	65

(a) (i) Plot the data in the table on the grid below. Join the points with straight lines.



(2)

Leave blank

(ii) How does smoking a cigarette affect pulse rate?

.....

(1)

(iii) How many minutes did it take for the pulse rate to return to normal after smoking the cigarette?

.....

(1)

(b) The table below gives three types of blood vessel in the human body.

Which type of blood vessel is used to measure pulse rate?

Tick (✓) the correct answer.

Blood vessel	**Tick**
artery	
capillary	
vein	

(1)

(c) Smoking cigarettes can harm the body. In which organ may bronchitis, cancer and emphysema occur as a result of smoking cigarettes?

.....

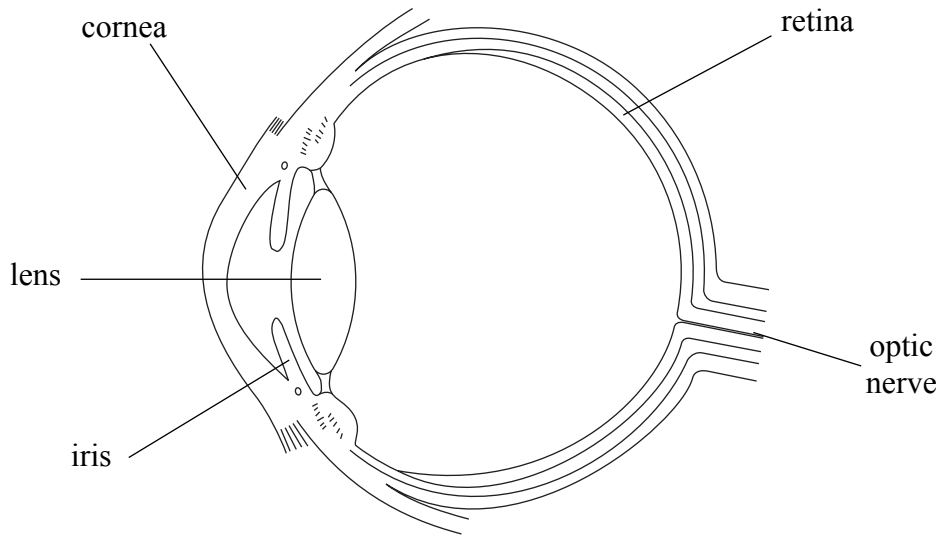
(1)

Q6

(Total 6 marks)

Leave blank

7. The diagram shows a section through the human eye.



(a) Name the part that connects the eye to the brain.

.....

(1)

(b) (i) The lens bends light. Name the other part of the eye that bends light.

.....

(1)

(ii) Cataract is an eye problem in which the lens becomes cloudy. Suggest how a cataract would affect the ability to see an object.

.....

.....

.....

(2)

Q7

(Total 4 marks)

Leave blank

8. The passage below describes methods used to kill pests that eat crops. Complete the passage by writing **one** correct word in each empty box. You are given a list of words to choose from.

biological	**carnivores**	**chains**	**chemical**
decreases	**herbivores**	**hormones**	**increases**
harm	**help**	**pesticides**	**stored**

[ ] are chemicals that kill pests. Spraying these chemicals onto crops [ ] the yield. Another way to kill pests uses living organisms that eat them. The pests are called herbivores and the organisms that eat them are called [ ]. This method of lowering the number of pests is called [ ] control. Some people think that using chemicals is not a good idea because the chemicals can [ ] organisms that are not pests. If this happens, the food [ ] in the habitat can be damaged.

(Total 6 marks)

Q8

Leave blank

9. Living organisms can be put into major groups based on common features that they share. The table below shows some main groups of organisms, some of their features and some examples of each.

Complete the table to show the correct groups, **two** features of each group and **one** example of an organism in each group.

Group	Features	Example
animals	1 multicellular 2 do not contain chloroplasts	
bacteria	1 2	
	1 parasitic 2 only reproduce inside living cells	tobacco mosaic

Q9

(Total 5 marks)

Leave blank

10. A pregnant woman asked her doctor about the chances of her baby being a boy. The doctor said that there was an equal chance of the baby being a boy or a girl.

Complete the diagram below to explain why the doctor said this.

Use **X** and **Y** to represent the sex chromosomes.

	Male		**Female**
parents	.....	×	.....
gametes	....	×	....
offspring genotypes	.....		
offspring phenotypes	.....		

(Total 4 marks)

Q10

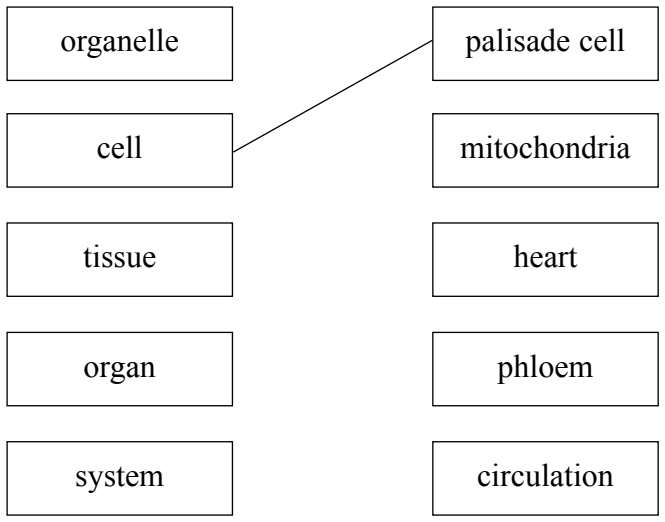
Leave blank

11. Within organisms there are five different levels of organisation. These are listed below.

Examples of each level of organisation are also listed in the second column, but in random order.

(a) Draw a line to join each level of organisation to the correct example.

One has been done for you.



(4)

(b) What level of organisation does a chloroplast belong to?

.....

(1)

(Total 5 marks)

Q11

Leave blank

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Leave blank

12. Certain cells lining the pancreatic duct produce mucus. In people who inherit cystic fibrosis these cells produce very sticky mucus. This sticky mucus blocks the pancreatic duct.

The gene for mucus production has two alleles. The allele for producing normal mucus, **N**, is dominant to the allele for producing very sticky mucus, **n**.

(a) Two parents are heterozygous for this gene. They had four children.

(i) In the box below give the genotype of one of the parents.

(1)

(ii) The boxes below show the genotypes of their four children. Put a circle around the box showing the genotype of a child with cystic fibrosis.

(1)

NN	**Nn**	**Nn**	**nn**

(iii) How many of the children are homozygous?

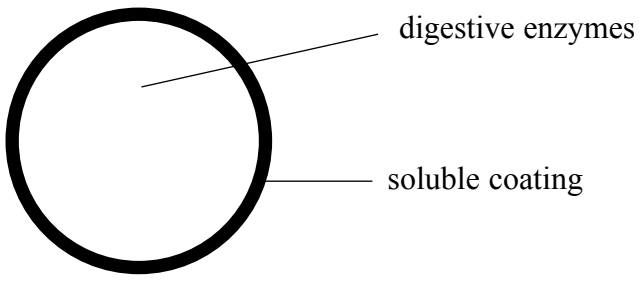
.....

(1)

Leave blank

(b) People with cystic fibrosis cannot easily digest their food because the digestive enzymes they need are not present in part of the small intestine (duodenum).

One way of treating cystic fibrosis is for people to take tablets containing digestive enzymes with their meals. The diagram shows a section through a tablet.



(i) Suggest why the digestive enzymes are not present in the duodenum.

.....

.....

(1)

(ii) Suggest **three** different types of digestive enzyme that might be in the tablet.

1 .....

2 .....

3 .....

(3)

(iii) It is important that the soluble coating does not dissolve until the tablet has passed through the stomach. Suggest why the enzymes in the tablet might not work if they had been released in the stomach.

.....

.....

.....

.....

(2)

Q12

(Total 9 marks)

Leave blank

13. Farmers have attempted to increase the yield of crop plants by the use of glasshouses and fertiliser.

Explain how the use of glasshouses and fertiliser can result in an increase in crop yield.

.....

.....

.....

.....

.....

.....

.....

.....

Q13

(Total 6 marks)

14. Humans control and coordinate their body function using either hormones or nerves to communicate between receptors and effectors.

(a) Name the **two** main parts that make up the central nervous system.

1 .....

2 .....

(2)

(b) Hormonal and nervous communication differ in a number of ways. Complete the table below to show how nervous and hormonal systems differ.

Property	Nervous	Hormonal
speed of conduction		
message carried by		
duration of response		
nature of message		

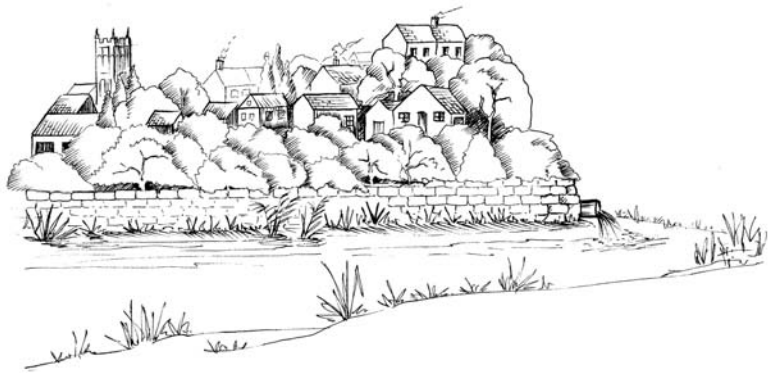
(6)

Q14

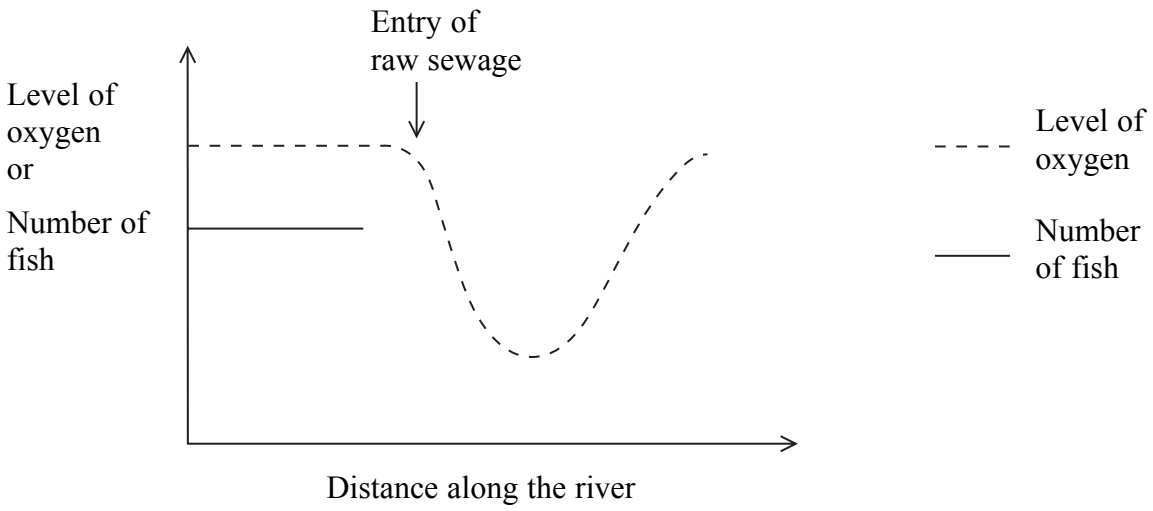
(Total 8 marks)

Leave blank

15. The diagram shows where raw sewage entered a river from a village.



The graph shows changes to the level of oxygen in this river. It also shows the number of fish up to the point where untreated sewage entered the river.



(a) (i) Describe how the level of oxygen changed in the river after the entry of raw sewage.

.....

.....

(1)

(ii) Explain the changes in the level of oxygen after the entry of raw sewage.

.....

.....

.....

(3)

(b) Continue the line on the graph to show what would happen to the number of fish in the river after the entry of raw sewage.

(2)

Q15

(Total 6 marks)

Leave blank

16. This is an extract from the brochure of a company specialising in unusual holidays.

South Pole Ski Expedition

"A journey to the end of the earth for the ambitious adventurer! ... We'll load up our sleds at 89° South and travel the unmarked landscape to the South Pole"

©northpole.com

(a) People who are active in cold conditions need a lot of energy.

(i) What is the name of the process that releases energy in living organisms?

.....

(1)

(ii) Complete the word equation for the process that releases energy.

..... + oxygen ⟶ energy + carbon dioxide + ...

(2)

(iii) The oxygen needed for this process is present in the air.

Describe how air is taken into the lungs.

.....

.....

.....

.....

.....

(3)

(b) The people pulling the sleds have to work hard and may find it difficult to take in enough oxygen.

When this occurs, a substance is produced in the muscles and this causes cramp.

What is the name of this substance?

.....

(1)

Q16

(Total 7 marks)

TOTAL FOR PAPER: 100 MARKS

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