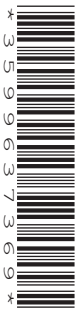
Cambridge Assessment International Education

Cambridge IGCSE™ (9–1)

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			



BIOLOGY **0970/32**

Paper 3 Theory (Core) **October/November 2020**

1 hour 15 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Blank pages are indicated.

[Turn over

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1 All living organisms have the same characteristics.

Two of these characteristics are movement and nutrition.

(a) State **three other** characteristics of living organisms.

1 .....

2 .....

3 .....

[3]

(b) Fig. 1.1 shows animals that belong to one vertebrate group.

State the name of this vertebrate group and give **one visible** characteristic feature of this group.

Fig. 1.1

name of group .....

feature of group .....

[2]

(c) State the names of **two other** groups of vertebrates.

1 .....

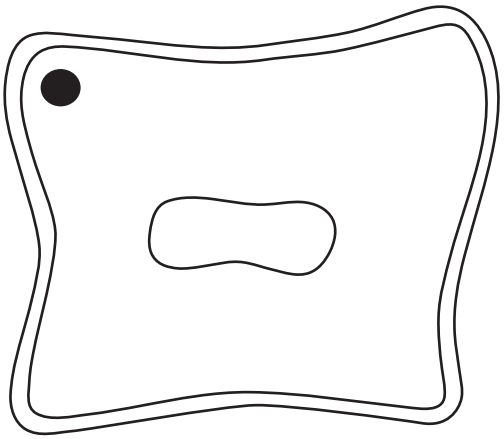
2 .....

[2]

[Total: 7]

[Turn over

2 Fig. 2.1 shows a plant cell after it has been in a solution of glucose for fifteen minutes.



cell membrane

cytoplasm

vacuole

Fig. 2.1

(a) Draw label lines **on Fig. 2.1** to link each label to the correct structure. [3]

(b) The plant cell in Fig. 2.1 was then placed in distilled water.

Fig. 2.2 shows the appearance of the cell after fifteen minutes in distilled water.

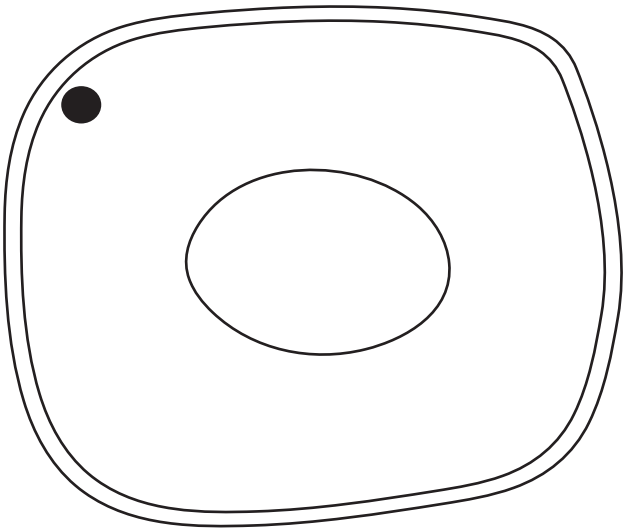


Fig. 2.2

(i) State **two** ways in which the plant cell has changed.

1 .....

.....

2 .....

.....

[2]

(ii) Explain why the plant cell changed when it was placed in distilled water.

.....

.....

.....

.....

.....

..... [3]

[Total: 8]

3 **(a)** The boxes on the left contain the names of components of the diet.

The boxes on the right contain the functions of these components in the body.

Draw **one** straight line to link each component of the diet to its correct function.

Draw **four** lines.

component of the diet	function
calcium ions	bone formation
fat	growth of muscles
protein	insulation
vitamin D	

[4]

(b) Fig. 3.1 shows the average percentage composition of some common foods.

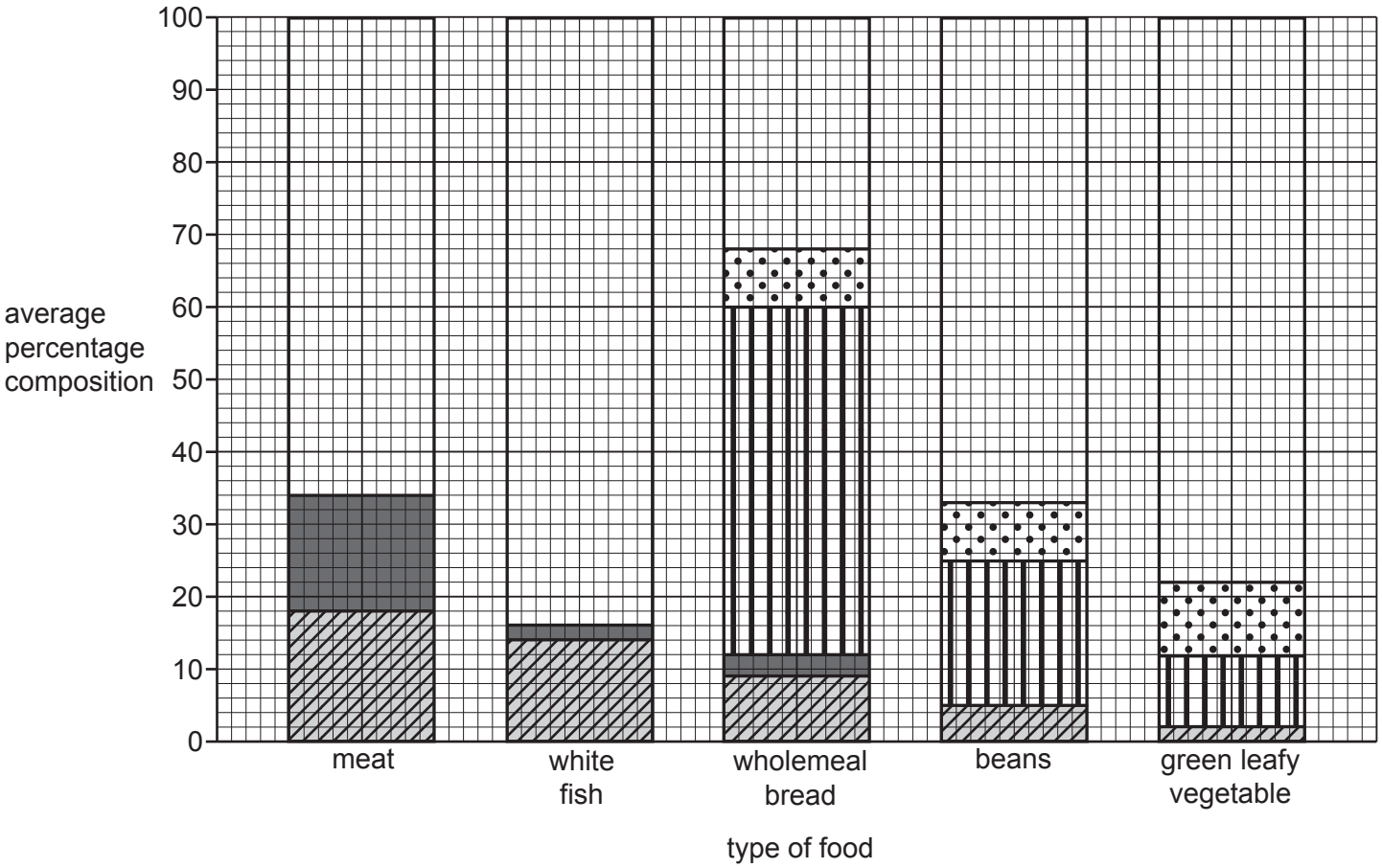


Fig. 3.1

(i) State the type of food in Fig. 3.1 that contains the most fat.

..... [1]

(ii) State **one** type of food in Fig. 3.1 that does **not** contain fibre.

..... [1]

(c) Describe the importance of fibre in the diet.

.....

.....

..... [1]

[Turn over

(d) **(i)** State **one** food that contains vitamin C.

..... [1]

(ii) State **one** disease caused by a lack of vitamin C.

..... [1]

(e) Table 3.1 shows the energy used by an adult male over 24 hours.

Table 3.1

activity	energy used / kJ
sleeping	2400
awake, but physically inactive	3000
awake and active	6600

(i) Calculate the total energy used by the adult male in 24 hours.

..... kJ [1]

(ii) Calculate the percentage of energy used by the adult male while sleeping.

..... % [1]

(iii) State the name of the process that releases energy to maintain a constant body temperature while the adult male is sleeping.

..... [1]

[Total: 12]

4 **(a)** Complete the sentences about human influences on ecosystems.

Use words from the list.

Each word may be used once, more than once, or not at all.

deforestation	**fertilisers**	**herbicides**
insecticides	**livestock**	**monoculture**
pectinases	**pollinate**	**pollute**

When one type of crop of the same species is grown on a large scale it is called a

..... .

Chemical ..... add mineral ions to the soil to increase the yield of crops.

Weeds can be killed by ..... .

Crop damage by insects can be reduced by the use of ..... . One disadvantage is that this kills useful insects which ..... flowers.

[5]

(b) State the names of **two** greenhouse gases that are produced as a consequence of farming.

1 .....

2 .....

[2]

[Total:7]

5 Fig. 5.1 shows a food web.

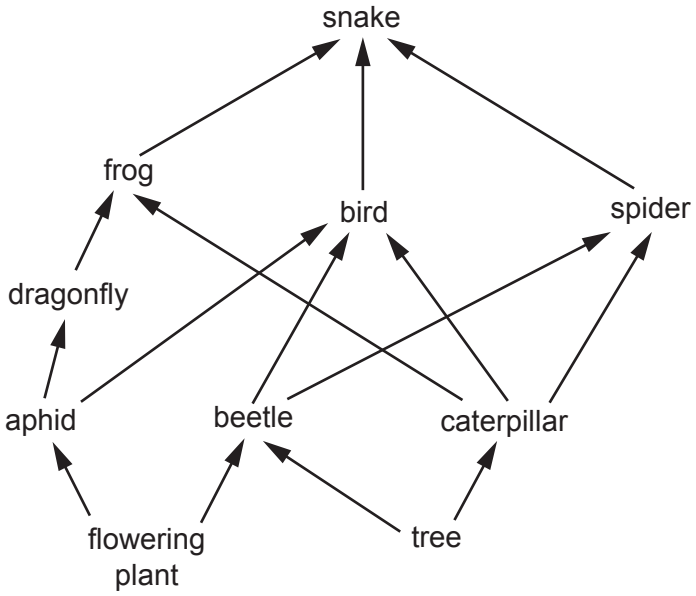


Fig. 5.1

(a) (i) Complete Table 5.1 using the information in Fig. 5.1.

One has been done for you.

Table 5.1

	number shown in Fig. 5.1
producers	2
herbivores	
primary consumers	
carnivores	

[3]

(ii) State the name of **one** organism in Fig. 5.1 which obtains its energy from eating three different organisms.

..... [1]

(b) A disease killed most of the snakes in the food web in Fig. 5.1.

Complete the sentences by circling the correct words **in bold**.

The first one has been done for you.

The population of snakes **increases** / (**decreases**) / **stays the same** .

The population of spiders **increases / decreases / stays the same** because there is less **predation / food / competition** .

The population of caterpillars **increases / decreases / stays the same** because there is more **predation / food / competition** .

[2]

(c) Decomposers are not shown in the food web in Fig. 5.1.

Complete the definition of the term decomposer.

A decomposer is an organism that gets its ..... from dead or waste ..... material.

[2]

(d) Fig. 5.2 shows a food chain.

Fig. 5.2

Table 5.2 shows the number of organisms in this food chain and some of the information needed to draw a pyramid of numbers.

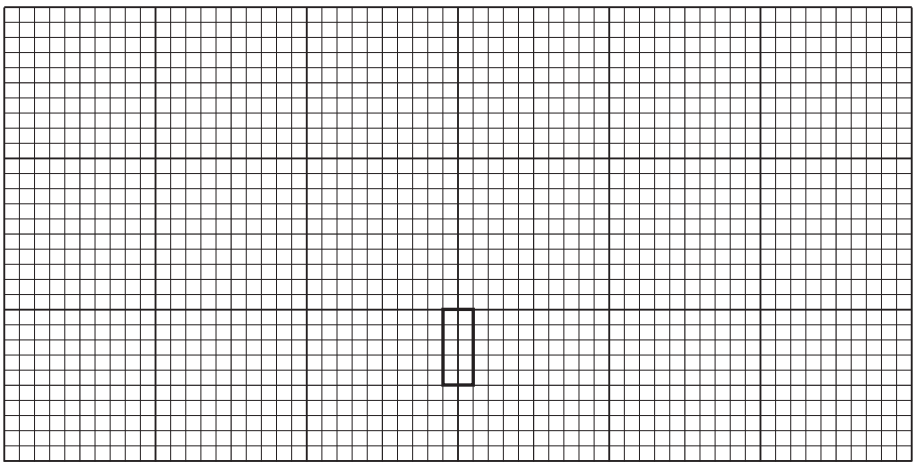
Table 5.2

organism	number of organisms	width of bar in pyramid / mm
bird	2	
caterpillar	20	80
cabbage	1	4

(i) Complete Table 5.2 by calculating the missing value and writing it in the table. [1]

(ii) Complete the pyramid of numbers on the grid for the food chain shown in Fig. 5.2 using the information in Table 5.2. The bar for the cabbage has been done for you.

Label the organisms on the pyramid of numbers.



[3]

[Total: 12]

6 **(a)** Define the term drug.

.....

.....

..... [2]

(b) Antibiotics are a type of drug.

State the type of infection antibiotics are used to treat.

..... [1]

(c) Table 6.1 shows the year in which three different types of antibiotics were first used and the year that antibiotic resistance was first detected.

Table 6.1

antibiotic	year of first use	year resistance first detected
A	1952	1988
B	1962	1973
C	2000	2003

Compare the data for the three antibiotics in Table 6.1.

.....

.....

.....

.....

.....

.....

..... [3]

(d) The body has defences against infections caused by pathogens.

State **three** body defences that prevent pathogens from entering the body.

1 .....

2 .....

3 .....

[3]

[Total: 9]

7 Fig. 7.1 shows part of the female human reproductive system.

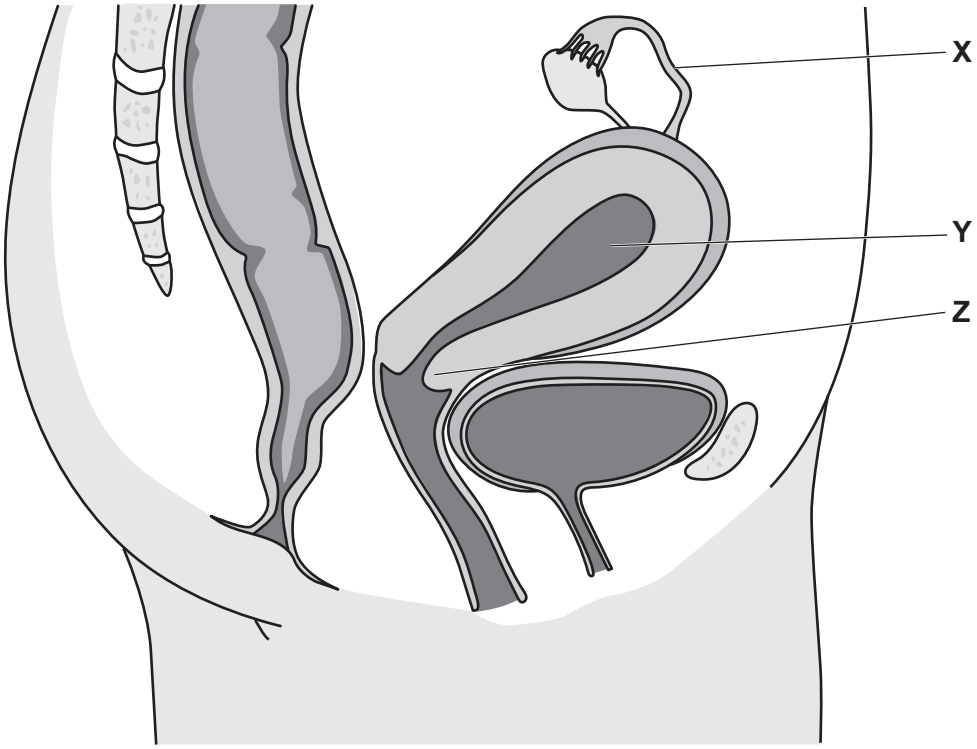


Fig. 7.1

(a) State the names of the structures labelled **X**, **Y** and **Z** on Fig. 7.1.

X .....

Y .....

Z .....

[3]

(b) The box on the left shows the beginning of a sentence.

The boxes on the right show some endings of sentences.

Draw **three** lines from the word oestrogen to make complete three correct sentences.

Oestrogen	is a hormone.
	is produced in the ovaries.
	makes breasts grow.
	makes hair grow on the chest.
	travels down the oviduct.
	widens the pupils.

[3]

(c) The average menstrual cycle is 28 days.

(i) State the day in an average menstrual cycle when:

ovulation occurs .....

the uterus lining starts to shed .....

the uterus lining is at its thinnest .....

[3]

(ii) Describe **one** change, other than ovulation, that occurs in the ovary during the menstrual cycle.

.....

.....

..... [1]

[Total: 10]

8 Plants carry out photosynthesis.

(a) State the names of **two** substances produced by photosynthesis.

1 .....

2 .....
[2]

(b) A student investigated how temperature affects the rate of photosynthesis. The concentration of carbon dioxide was kept constant during the investigation.

The results are shown in Fig. 8.1.

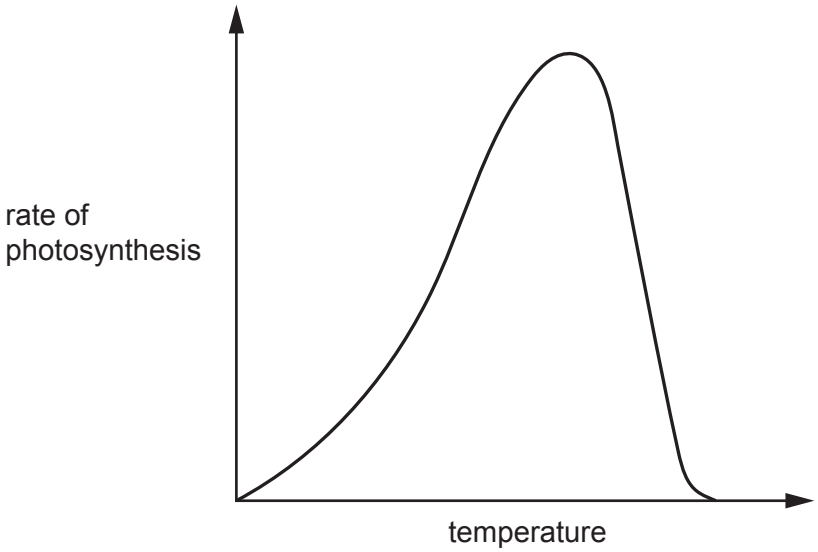


Fig. 8.1

(i) Predict how the rate of photosynthesis will change when carbon dioxide concentration increases and the temperature is kept constant at 20 °C.

.....

.....

..... [1]

(ii) State **one** factor other than temperature and carbon dioxide concentration that will affect the rate of photosynthesis.

..... [1]

(c) In another investigation students used a plant which had variegated leaves.

One of the leaves from this plant is shown in Fig. 8.2.

Fig. 8.2

Complete Table 8.1 to show where the processes of photosynthesis and respiration occurred in this variegated leaf when the plant was in the light.

Place a tick (✓) in each correct box.

Table 8.1

process	area **A**	area **B**
photosynthesis		
respiration		

[2]

(d) Cells in the mesophyll layers of a leaf carry out photosynthesis.

State the names of **two** leaf layers that light must pass through to reach the spongy mesophyll cells.

1 .....

2 .....

[2]

(e) Plants absorb mineral ions from the soil.

(i) State the name of the tissue that transports mineral ions in plants.

..... [1]

(ii) State the name of the mineral ion that is used to make chlorophyll.

..... [1]

(iii) State the name of the mineral ion that is used to make amino acids.

..... [1]

(f) Plants are involved in nutrient cycles in ecosystems.

Describe the role of plants in the carbon cycle and the water cycle.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 15]

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