Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

4449332751

BIOLOGY **0610/32**

Paper 3 Theory (Core) **February/March 2021**

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 **16** pages.

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1 Fig. 1.1 is a diagram of the alimentary canal and associated organs.

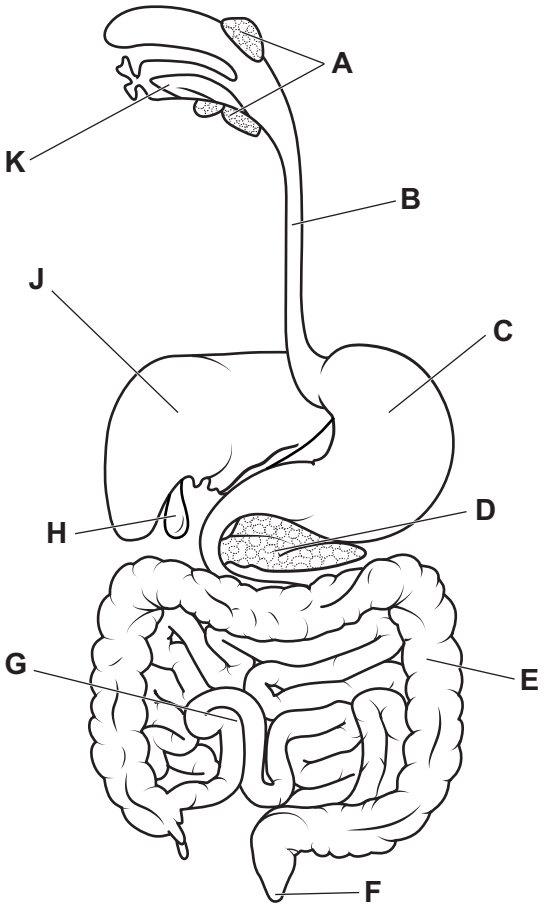


Fig. 1.1

(a) State the letter from Fig. 1.1 that identifies the part where:

alcohol is broken down .....

egestion occurs .....

hydrochloric acid is produced .....

mechanical digestion occurs .....

salivary amylase is produced .....

the most absorption occurs. .....

[6]

(b) State the names of the parts labelled **B** and **H** in Fig. 1.1.

B .....

H .....

[2]

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(c) State the names of the **three** parts of the large intestine.

1 .....

2 .....

3 .....

[3]

[Total: 11]

2 **(a)** Different age groups of people, in one area, were asked about their tobacco smoking habits.

Fig. 2.1 is a graph that shows the percentage of people that currently smoke tobacco and the percentage of people that used to smoke tobacco but have now stopped.

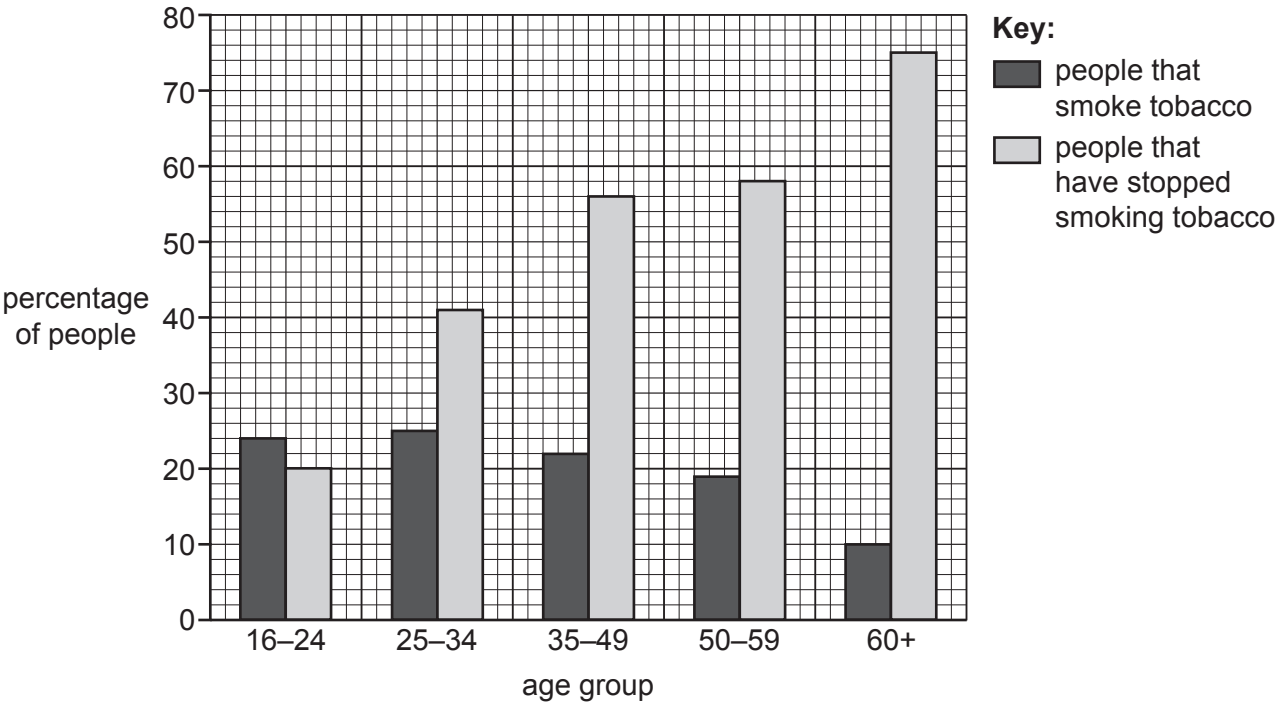


Fig. 2.1

Describe how the data for the 60+ age group are different from the 16 – 24-year-old age group.

.....

.....

.....

.....

.....

.....

..... [3]

(b) Lung cancer and other cancers are caused by smoking tobacco.

State the names of **two other** diseases caused by smoking tobacco.

1 .....

2 .....

[2]

(c) State the name of the component of tobacco smoke that causes cancer.

..... [1]

(d) Describe the effects of carbon monoxide on the gas exchange system.

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 9]

3 Fig. 3.1 shows a food web.

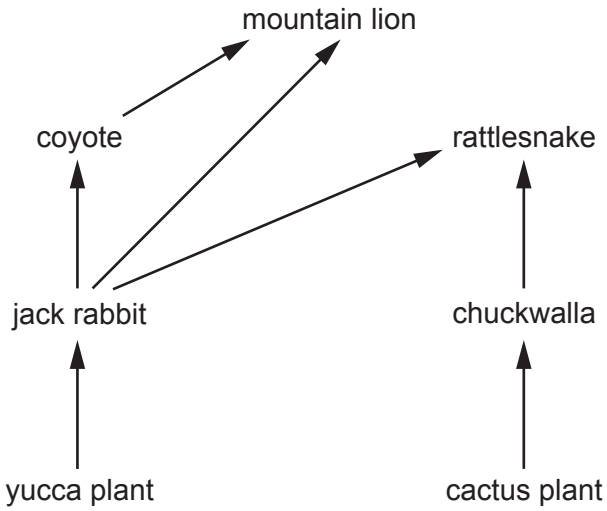


Fig. 3.1

(a) A scientist found that chuckwallas were also eaten by coyotes.

Draw an arrow **on Fig. 3.1** to show this information. [1]

(b) Table 3.1 shows some of the terms used to describe the organisms in Fig. 3.1.

Place tick(s) (✓) in all the boxes in Table 3.1 that correctly describe each organism.

Table 3.1

	producer	consumer	herbivore	carnivore
coyote				
jack rabbit				
rattlesnake				
yucca plant				

[4]

(c) State the name of the organism in Fig. 3.1 that is both a secondary and a tertiary consumer.

..... [1]

(d) A new organism that eats cactus plants was introduced to the food web in Fig. 3.1.

Predict **and** explain the effect this would have on the chuckwalla population.

.....

.....

.....

.....

..... [2]

(e) Chuckwallas are a type of lizard.

They have adapted to be able to lose part of their tail if they are caught by predators.

Fig. 3.2 is a photograph of a chuckwalla.



Fig. 3.2

Complete the sentences using words from the list to describe how chuckwallas have evolved the ability to lose part of their tails by natural selection.

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

all	**alleles**	**behaviour**	**none**
offspring	**parents**	**predators**	**some**

A mutation caused some of the population of chuckwallas to be able to lose part of their tail.

Chuckwallas that could lose their tail were able to escape ..... .

These chuckwallas survived long enough to breed and pass their .....

on to their ..... .

Eventually ..... of the chuckwallas had the ability to lose their tails.

[4]

[Total: 12]

4 **(a)** Fig. 4.1 is a diagram of a plant cell.

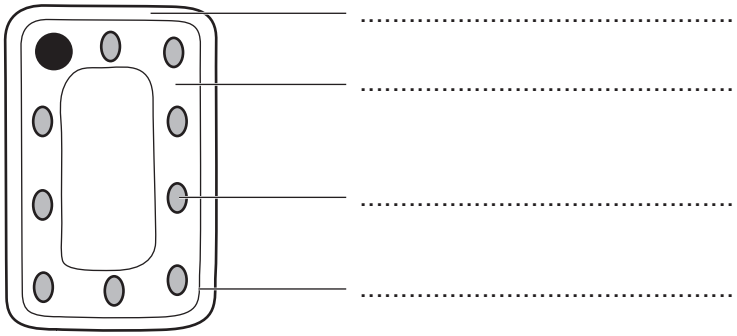


Fig. 4.1

Identify the parts of the plant cell in Fig. 4.1 by labelling them in the spaces provided, using words from the list.

cell membrane	**cell wall**	**chloroplast**
cytoplasm	**nucleus**	**vacuole**

[4]

(b) The boxes on the left show parts of a plant cell.

The boxes on the right show the functions of the parts.

Draw lines to link each part with its function. Draw **four** lines.

part	**function**
	contains the genetic material
cell wall	
	filled with sap and supports the plant cell
chloroplast	
	made of cellulose and strengthens the plant cell
nucleus	
	site of photosynthesis
vacuole	
	site of respiration

[4]

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(c) Xylem is a specialised plant tissue.

State **two** functions of xylem tissue.

1 .....

2 .....
[2]

(d) Plant shoots and roots respond to stimuli.

Fig. 4.2 is a photograph of a plant that has been grown in the dark.

The plant has been grown with the pot in this position and is showing a tropic response to this stimulus.



Fig. 4.2

(i) State the name of the tropic response shown in Fig. 4.2.

..... [1]

(ii) Describe how the roots would respond to the same stimulus.

.....

.....

..... [1]

[Total: 12]

5 **(a)** A student investigated the effect of the concentration of carbon dioxide on the rate of photosynthesis in an aquatic plant.

Table 5.1 shows the results of the investigation.

Table 5.1

concentration of carbon dioxide / ppm	rate of release of oxygen / cm^3 per hour
0	0.0
100	11.2
300	26.1

(i) Describe **and** explain the results shown in Table 5.1.

.....

.....

.....

.....

.....

.....

..... [3]

(ii) State why the temperature should have been kept constant during this investigation.

.....

.....

..... [1]

(b) Carbon dioxide is an example of a greenhouse gas.

(i) State the name of **one other** greenhouse gas.

..... [1]

(ii) State the name of the chemical used to test for the presence of carbon dioxide and state the result of a positive test.

chemical .....

positive result .....
[2]

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(c) Farmers use fertilisers on crops to improve crop growth. These fertilisers can cause pollution when washed into rivers.

State the names of **two other** substances used to improve crop yield that can cause pollution.

1 .....

2 .....
[2]

[Total: 9]

6 **(a)** The box on the left contains the term ‘Anaerobic respiration’.

The boxes on the right show some sentence endings.

Match the box on the left to **three** boxes on the right to make three correct sentences.

Anaerobic respiration	involves the action of enzymes.
	is required for diffusion to occur.
	produces lactic acid in humans.
	releases less energy per glucose molecule than aerobic respiration.
	requires carbon dioxide.
	requires oxygen in humans.

[3]

(b) State the word equation for anaerobic respiration in yeast.

..... [2]

(c) Respiration is one of the characteristics of living things.

State the names of **three other** characteristics of living things.

1 .....

2 .....

3 .....

[3]

[Total: 8]

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7 **(a)** Fig. 7.1 is a diagram of the circulatory system.

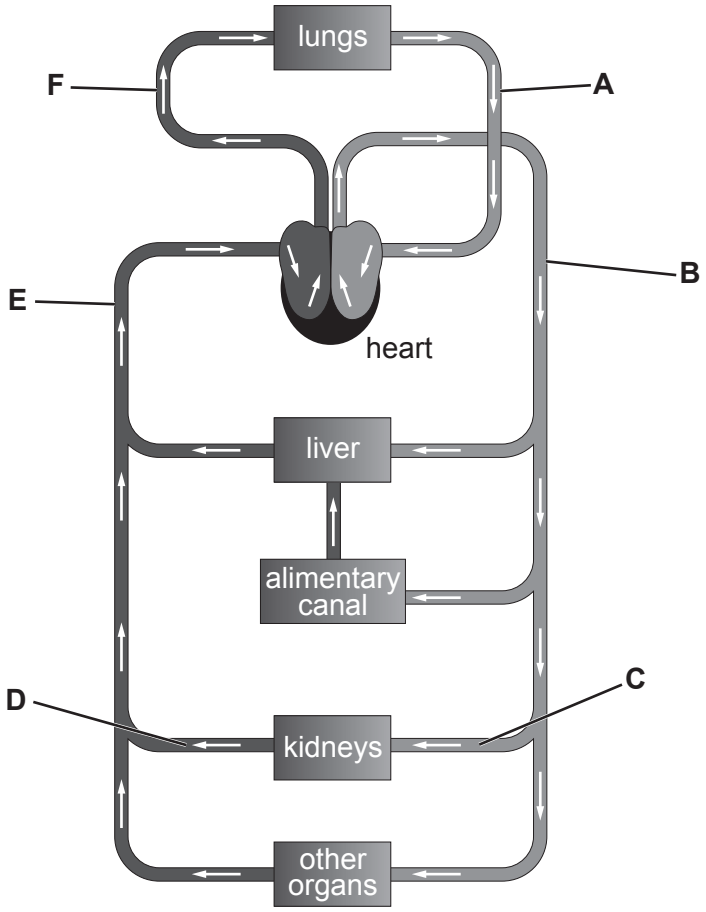


Fig. 7.1

(i) State the names of the blood vessels labelled **A**, **C** and **E** in Fig. 7.1.

A .....

C .....

E .....

[3]

(ii) State the letter in Fig. 7.1 that identifies the blood vessel that contains the highest oxygen concentration.

..... [1]

(b) Describe **three** ways the structure of arteries differs from the structure of veins.

1 .....

.....

2 .....

.....

3.....

.....

[3]

(c) White blood cells are one of the components of blood.

(i) State **two** functions of white blood cells.

1 .....

2 .....

[2]

(ii) State **two other** main components of blood.

1 .....

2 .....

[2]

[Total: 11]

8 **(a)** Menstruation is the monthly loss of the lining of the uterus.

The age, in years, when the first menstruation occurred was recorded for one area.

Table 8.1 shows the results.

Table 8.1

age, in years, when the first menstruation occurred	number of females
8	3
9	15
10	62
11	212
12	298
13	251
14	173
15	18
16	11
17	1

(i) State the most common age of first menstruation.

..... [1]

(ii) State the number of females that had their first menstruation at 15 years of age.

..... [1]

(b) Describe what happens to the lining of the uterus during a typical menstrual cycle between:

days 1 to 5 .....

.....

days 8 to 14 .....

.....
[2]

(c) Describe what happens in the ovary on day 14 in a typical menstrual cycle.

..... [1]

(d) State the name of the hormone that causes the development of secondary sexual characteristics in boys.

..... [1]

(e) State **two** physical changes that occur in males **and** in females during puberty.

1 .....

2 .....
[2]

[Total: 8]

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