

Candidate Name _____

Centre Number	Candidate Number

CAMBRIDGE INTERNATIONAL EXAMINATIONS
Joint Examination for the School Certificate
and General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY
PAPER 2

5096/2

OCTOBER/NOVEMBER SESSION 2002

2 hours

Additional materials:
Answer paper

TIME 2 hours

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page and on all separate answer paper used.

Section A

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

Section B

Answer **three** questions.

Write your answers on the separate answer paper provided.

At the end of the examination,

1. fasten all separate answer paper securely to the question paper;
2. write an **E** (for Either) or an **O** (for Or) next to the number 11 in the grid below to indicate which question you have answered.

INFORMATION FOR CANDIDATES

The intended number of marks is given in brackets [] at the end of each question or part question.

You are advised to spend no longer than 1 hour on Section A.

FOR EXAMINER'S USE	
Section A	
Section B	
9	
10	
11	
TOTAL	

This question paper consists of 10 printed pages and 2 blank pages.



Section A

Answer **all** the questions.

Write your answers in the spaces provided.

- 1 Table 1.1 shows the increase in mass of a fetus in the last 28 weeks of a pregnancy.

Table 1.1

age of fetus / weeks	mass of fetus / kg
12	0.1
16	0.2
20	0.3
24	0.7
28	1.25
32	1.75
36	2.25
40	3.5

- (a) On Fig. 1.1, complete the graph of fetal growth. The first three points have been plotted for you. Join all the points up to make a line on your graph. [6]

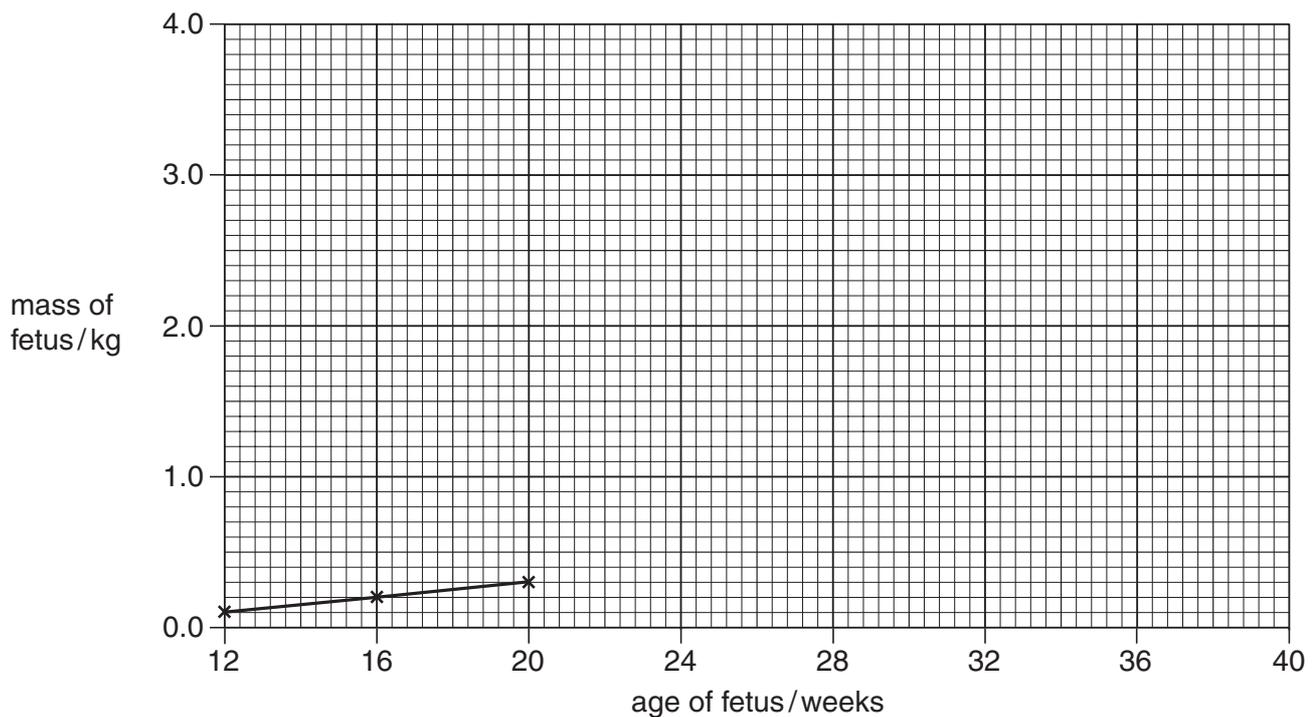


Fig. 1.1

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- (b) Using your graph, state over which period growth is
- (i) fastest, *between week* *and week* [1]
- (ii) slowest. *between week* *and week* [1]
- (c) What was the weight of the fetus at 38 weeks? kg [1]
- (d) Add a second line to your graph to show the probable effect on fetal growth if the mother began smoking heavily in week 20 of the pregnancy. Label this line **S**. [3]
- (e) Name the fluid that surrounds and cushions the fetus.[1]
- (f) It is possible to remove some of this fluid during pregnancy and, using a microscope, to examine some of the fetal cells found floating there. If these cells are dividing, tiny rod-like structures are seen in the nuclei.
- (i) What are these structures called?[1]
- (ii) How many are there in a normal fetal nucleus?[1]
- (iii) How do these structures differ in a male and female fetus?
.....
.....[2]
- (g) During birth, which part of the uterus
- (i) dilates during the first stage of birth;[1]
- (ii) contracts strongly during the second stage;[1]
- (iii) is expelled in the third stage?[1]

[Total : 20]

- 2 Fig. 2.1 shows some of the exchanges taking place between a green plant and its environment.

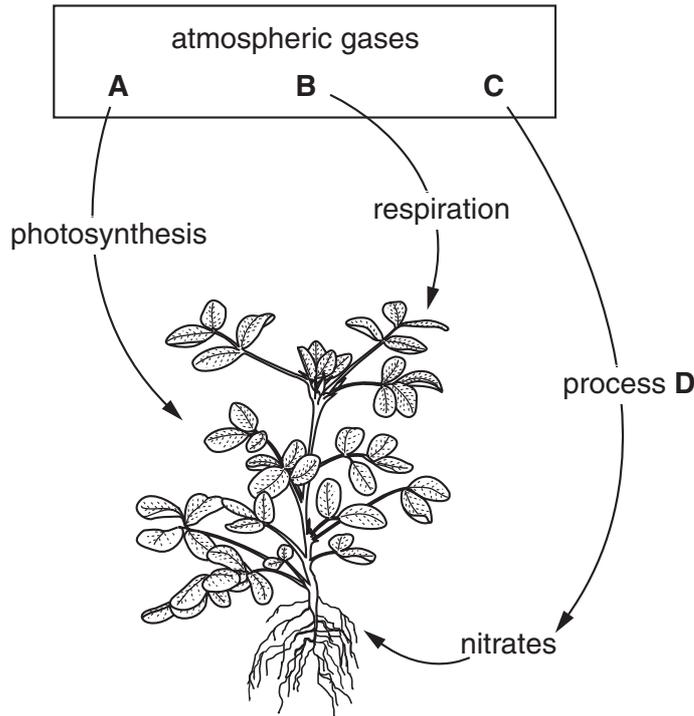


Fig. 2.1

- (a) Name gases **A**, **B** and **C**.

A

B

C

[3]

- (b) Name process **D**.[1]

- (c) Which type of organism carries out process **D**?

.....[1]

[Total : 5]

3 Fill in the blanks to complete the description of breathing.

In order to breathe in, the diaphragm muscle and the external intercostal muscle The volume of the thorax (chest) , while the pressure inside the chest Since the pressure inside is now than the atmospheric pressure, air flows into the lungs. Forced exhalation, as in blowing up a balloon, requires the contraction of the muscles.

[Total : 5]

4 (a) State three **early** signs or symptoms of gonorrhoea in a man.

- 1.
- 2.
- 3.[3]

(b) Which type of organism causes gonorrhoea?[1]

(c) Which method of contraception helps to limit the spread of gonorrhoea?
.....[1]

[Total : 5]

- 5 Fig. 5.1 shows changes in blood pressure in the left atrium, left ventricle and aorta during one heartbeat.

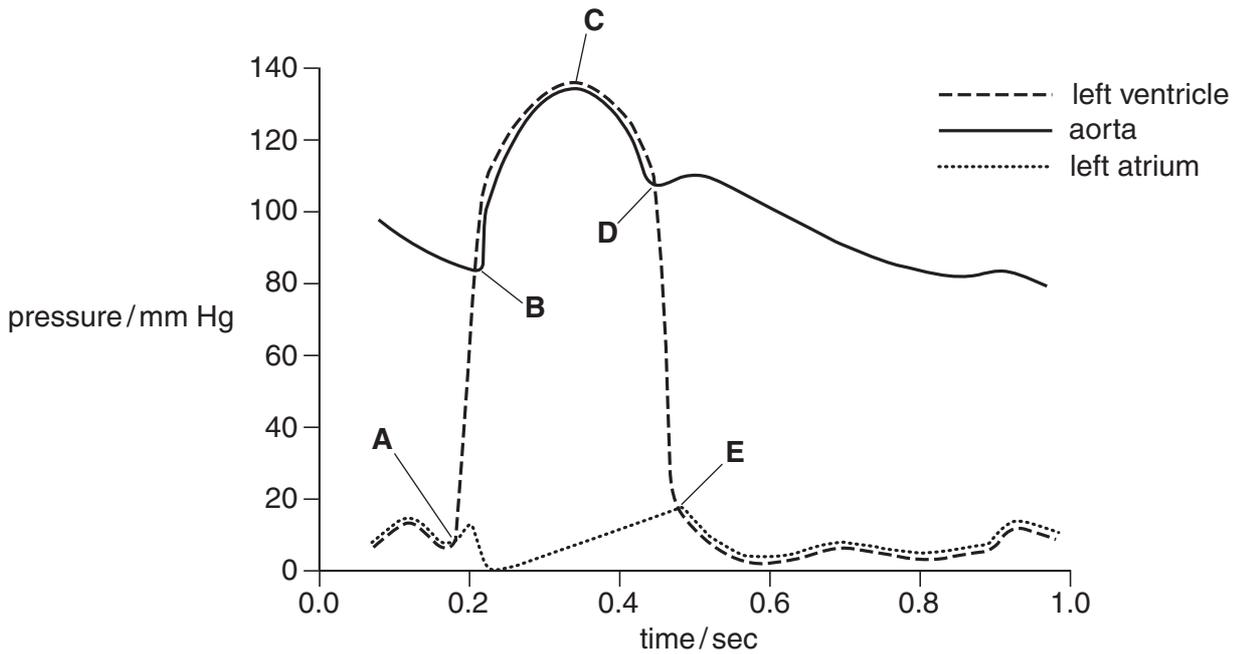


Fig. 5.1

- (a) What is the highest pressure reached in
- (i) the left ventricle, mm Hg [1]
- (ii) the left atrium? mm Hg [1]
- (b) Valves close when the pressure in one chamber first becomes greater than that in the previous chamber.
- Which letter, **A**, **B**, **C**, **D** or **E**, indicates the closing of
- (i) the bicuspid valve, [1]
- (ii) the aortic valve? [1]
- (c) Which feature of the left ventricle enables it to generate a pressure four times greater than that of the right ventricle?

.....

..... [1]

[Total : 5]

- 6 (a) State two uses of calcium ions in the body, other than in forming bones and teeth.
1.
 2.[2]
- (b) Which vitamin is needed for the uptake of calcium from the gut?[1]
- (c) Why does a breast-feeding mother need high calcium levels in her blood?
.....[1]
- [Total : 4]

7 Fig. 7.1 compares the number of smokers and non-smokers suffering from bronchitis in two towns. Town A has a higher level of air pollution than town B.

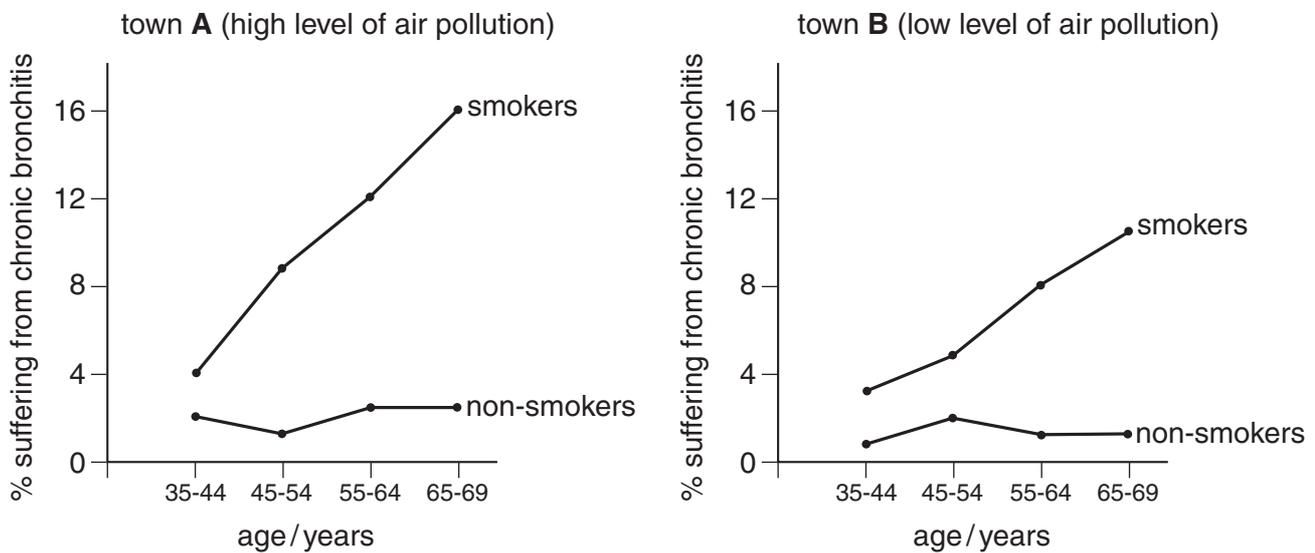


Fig. 7.1

What is the evidence from the two graphs that

- (a) smoking increases the incidence of bronchitis;
.....
.....[2]
- (b) air pollution also increases the incidence of bronchitis;
.....
.....[2]
- (c) smoking progressively damages the body's defences?
.....
.....[2]

[Total : 6]

[Turn over

- 8 Fig. 8.1 shows a blood smear as seen under the microscope.

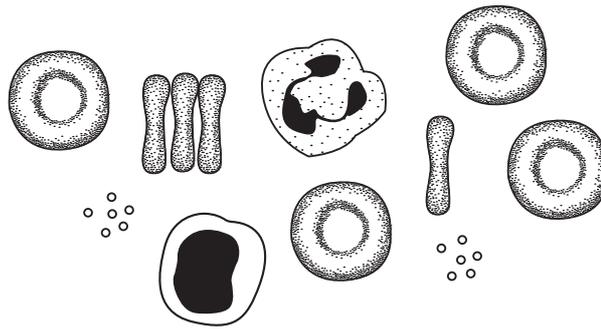


Fig. 8.1

- (a) On Fig. 8.1, label a phagocyte. [1]
- (b) Using only the terms **natural active**, **artificial active**, **natural passive** and **artificial passive**, state which type of immunity is being described below.
- (i) immunity developed from a serum
[1]
- (ii) immunity following an attack of influenza
[1]
- (iii) immunity resulting from antibodies crossing the placenta
[1]
- (iv) immunity developed from a vaccine
[1]

[Total : 5]

Section B

Answer **three** questions.

Question **11** is in the form of an **Either/Or** question. Only one part should be answered.

Write your answers on the separate answer paper provided.

- 9 (a)** Use your knowledge of digestion to explain the following statements.

Runners in a long-distance race will have a large, starchy meal several hours before their race starts.

Sprinters eat glucose tablets just before their race starts. [10]

- (b)** In the blood of the hepatic portal vein, glucose levels rise some hours after a meal. In the blood of the hepatic vein, glucose levels remain constant. Explain how the blood glucose level is regulated. [5]

[Total : 15]

- 10 (a)** Describe the stages in making sewage harmless and include the parts played by microorganisms. [10]

- (b)** Describe the dangers to people and to the environment of allowing untreated sewage to flow into rivers. [5]

[Total : 15]

Question 11 is on the next page.

11 Either

- (a) When reading a word in a book, we look directly at it, making sure it is well lit. From your knowledge of the retina, explain why we do this. [4]
- (b) Explain why, in dim light, objects are more clearly seen out of the corner of the eye. [2]
- (c) What changes occur in the eye when we move from a dimly lit room into bright sunlight? [4]
- (d) Eye-colour in humans is controlled by two alleles, **B** and **b**, where **B** is dominant and gives brown eye-colour.
- (i) Using a genetic diagram, explain how two brown-eyed parents may have a blue-eyed child. [4]
- (ii) What is the probability that any child of these parents is blue-eyed? [1]

[Total : 15]

Or

- (a) The blood of patients with liver disease shows abnormally high levels of amino acids and little or no urea. Why is this? [2]
- (b) Blood arriving at the kidneys contains proteins, amino acids and urea. Describe what happens to these substances as they pass through the kidneys. [6]
- (c) How does the urine of a person who has been sweating a lot differ from the urine produced by that person on a cold day? Explain how the differences come about. [5]
- (d) Patients with high blood pressure are given diuretics. These are medicines that increase urination. How does this help to reduce blood pressure? [2]

[Total : 15]

