



Paya Lebar Methodist Girls' School (Secondary)
End Of Year Examination 2025
Secondary 3 Express / G3

CANDIDATE
NAME

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CLASS

3	.	
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INDEX NUMBER

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BIOLOGY

modified 6093 / 01

Paper 1 Multiple Choice

8 October 2025

Additional Materials: Multiple Choice Answer Sheet

45 minutes

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Write your name and index number on the separate Answer Sheet in the spaces provided.

Do not use staples, paper clips, highlighters, glue or correction fluid.

There are **thirty** multiple-choice questions in this paper. Answer **all** questions. For each question, there are four possible answers **A, B, C** and **D**.

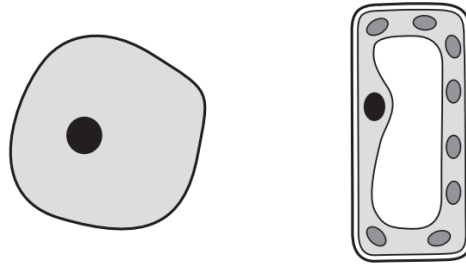
Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer. Any rough working should be done in this booklet.

The total mark for this paper is **30 marks**.

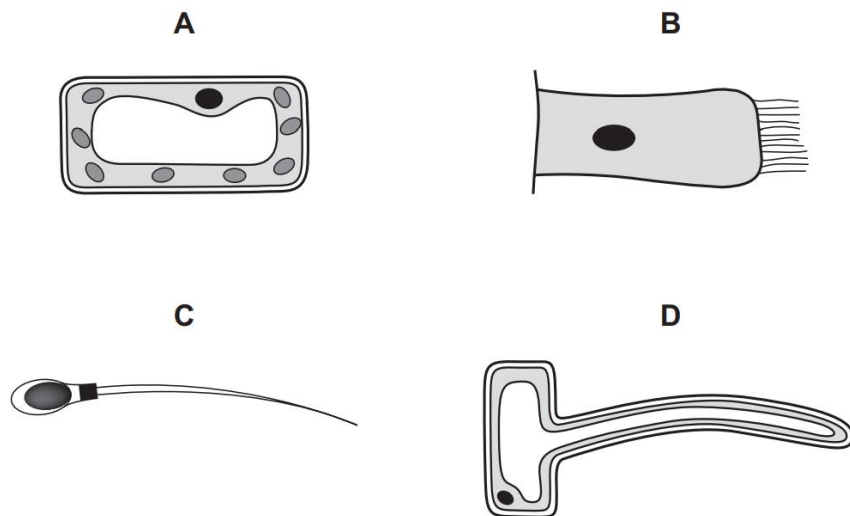
The use of an approved scientific calculator is expected, where appropriate.

- 1 The diagram shows two cells.



Which process happens in only one of these cells?

- A** controlling the chemical reactions in the cell
 - B** controlling the movement of substances into the cell
 - C** making carbohydrates from carbon dioxide
 - D** using glucose inside the cell
- 2 Which of the following cells is most likely to have the least amount of mitochondria?



NOT TO
SCALE

- 3 The table below shows the results of an experiment measuring the mass of four nutrients (P, Q, R, S) absorbed by the roots of a plant in one hour. The experiment was done in two sets of conditions, in the presence and absence of oxygen.

nutrient	mass absorbed in presence of oxygen / g per hour	mass absorbed in absence of oxygen / g per hour
P	3.5	3.3
Q	4.5	1.0
R	0.9	0.8
S	2.6	0.7

Which of the following conclusions can be made from the results?

- A** Nutrients P and R are mainly absorbed through active transport.
B Nutrients P and S are mainly absorbed through diffusion.
C Nutrients Q and R are mainly absorbed through diffusion.
D Nutrients Q and S are mainly absorbed through active transport.
- 4 In which row will the diffusion of ions into a cell be the quickest?

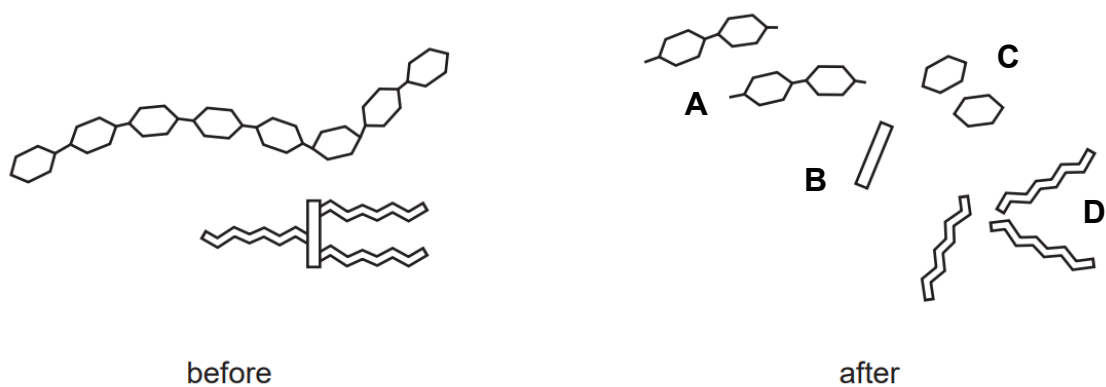
	ion concentration in the cell	ion concentration in the external solution	surface area-to-volume ratio of the cell	width of the cell membrane
A	high	low	large	thin
B	low	high	small	thick
C	high	low	small	thick
D	low	high	large	thin

- 5 Four solutions were tested to see if they contained protein, starch or glucose. The colours of the solutions after the tests are recorded in the table. Which solution contained protein and glucose but **not** starch?

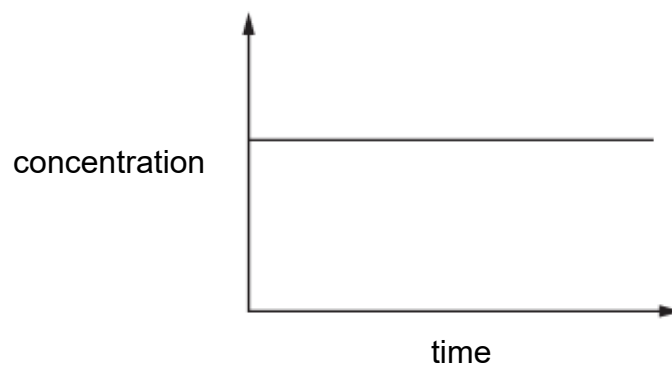
	biuret test	iodine solution test	Benedict's solution test
A	blue	yellow-brown	red
B	blue	blue-black	blue
C	purple	yellow-brown	red
D	purple	blue-black	blue

- 6 Which of the following is a correct statement about biological molecules?
- A Glycogen is made of smaller glycerol molecules.
 - B Oils contain the chemical elements carbon, hydrogen, oxygen and nitrogen.
 - C Protein is made of smaller amino acid molecules.
 - D Glycerol is made up of smaller glucose molecules.
- 7 The diagram shows two food molecules before and after they have been digested by enzymes.

Which identifies the product of digestion by maltase?



- 8 The graph shows the concentration of a substance during an enzyme-controlled reaction.

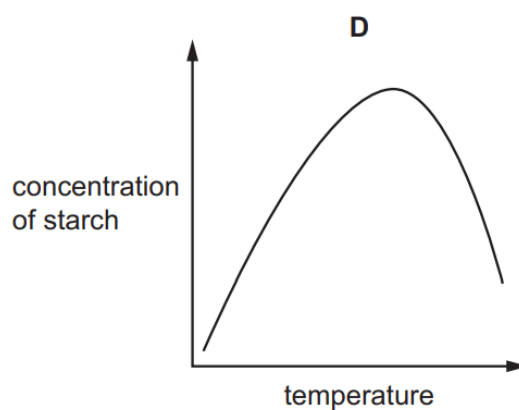
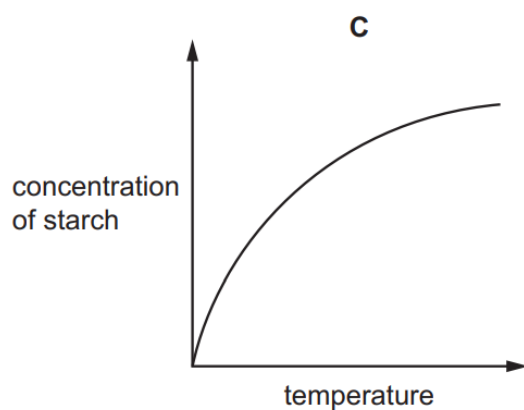
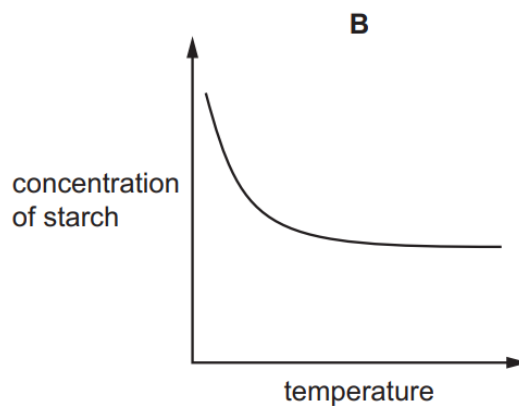
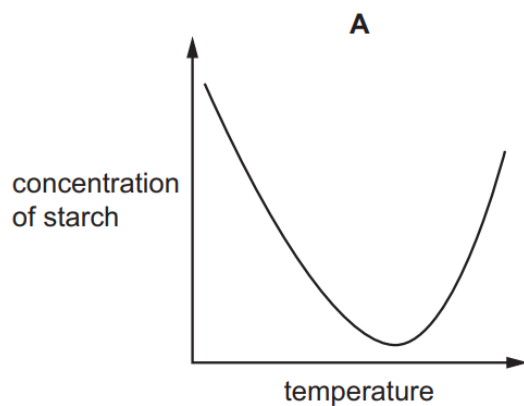


Which substance is this?

- A enzyme
- B enzyme-substrate complex
- C product
- D substrate

- 9 Some students investigated the effect of temperature on the digestion of starch to form maltose. They added equal volumes of amylase and starch solution to a number of test-tubes. The test-tubes were left for 30 minutes at a range of temperatures between 10°C and 60°C. They then measured the concentration of starch in each test-tube.

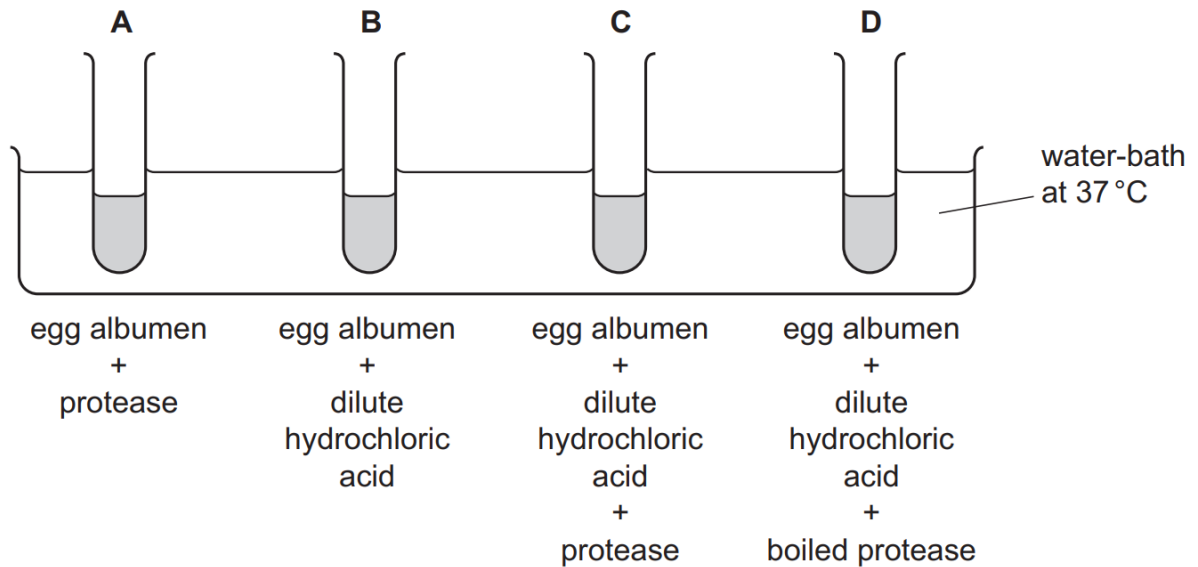
Which graph was produced from these results?



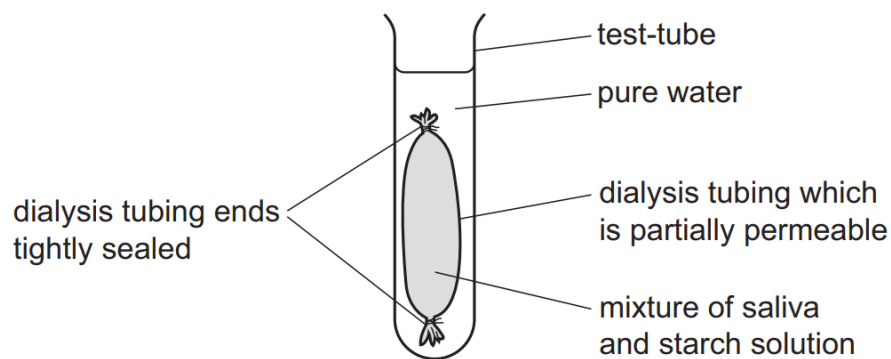
- 10** The diagram shows an experiment on the digestion of protein in egg albumen by protease.

The protease was taken from a human stomach.

In which test-tube will protein be digested most quickly?



- 11** The diagram shows the apparatus used in an experiment to demonstrate two processes that take place in the body.

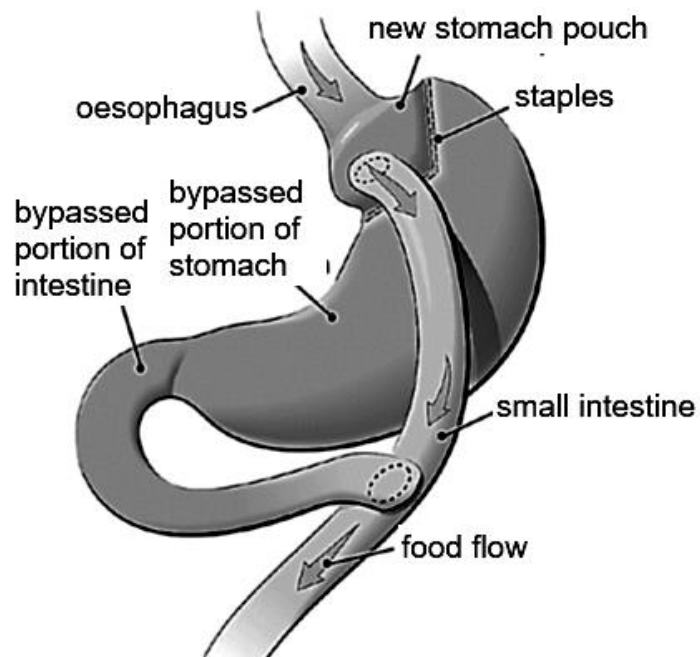


After one hour, the water outside the dialysis tubing contained reducing sugars.

Which two processes are represented by this experiment?

- A** absorption and egestion
- B** absorption and digestion
- C** digestion and egestion
- D** digestion and ingestion

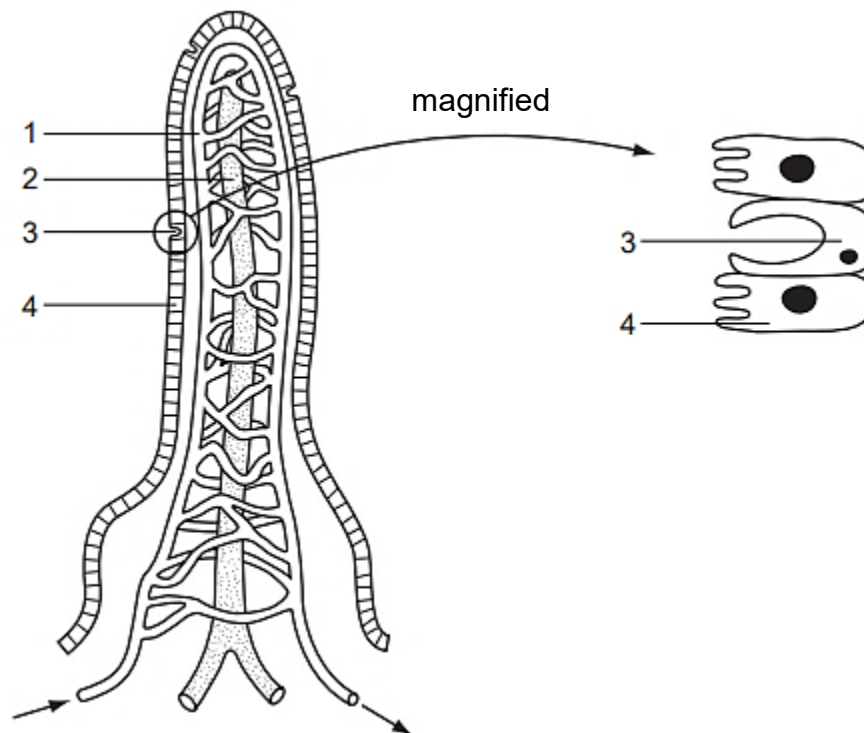
- 12 The figure illustrates a surgical procedure that is available to a select group of individuals.



Which of the following is **not** a likely result of this procedure?

- A chyme produced is of higher pH value
- B decreased formation of polypeptides
- C earlier sensation of fullness
- D increased egestion of waste products

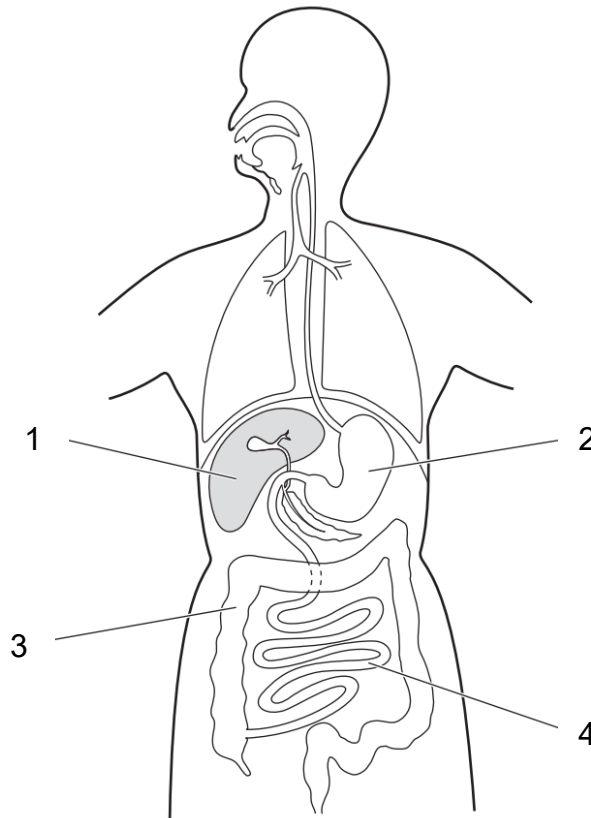
13 The diagram shows a section through a villus.



Which sequence correctly describes the function of the numbered parts?

	1	2	3	4
A	transports digested fats	transports glucose	absorbs digested food	produces mucus
B	transports digested fats	transports glucose	produces mucus	absorbs digested food
C	transports glucose	transports digested fats	absorbs digested food	produces mucus
D	transports glucose	transports digested fats	produces mucus	absorbs digested food

14 Which parts of the human digestive system is involved in producing enzymes?



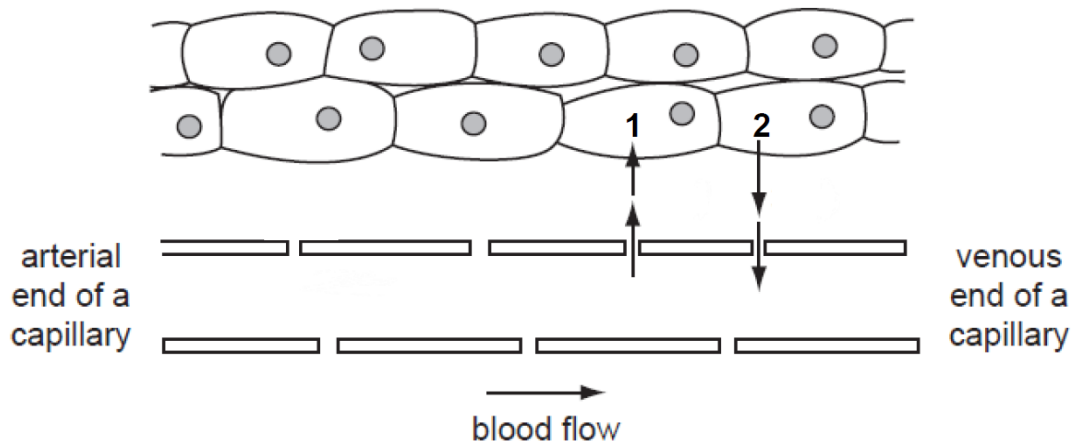
- A** 1 and 2 only
- B** 2 and 4 only
- C** 3 and 4 only
- D** 1, 2 and 4 only

15 A patient had to have half of his liver removed. What would happen after the surgery?

- 1 The faeces become oily.
- 2 Fat digestion is reduced.
- 3 The production of lipase is reduced.
- 4 Urea concentration in the blood is increased.

- A** 1 and 2 only
- B** 1 and 3 only
- C** 2, 3 and 4 only
- D** 1, 2, 3 and 4

- 16 The diagram represents a tissue with an adjacent blood capillary.



Which substances can 1 and 2 represent?

	1	2
A	urea	carbon dioxide
B	carbon dioxide	glucose
C	glucose	oxygen
D	oxygen	carbon dioxide

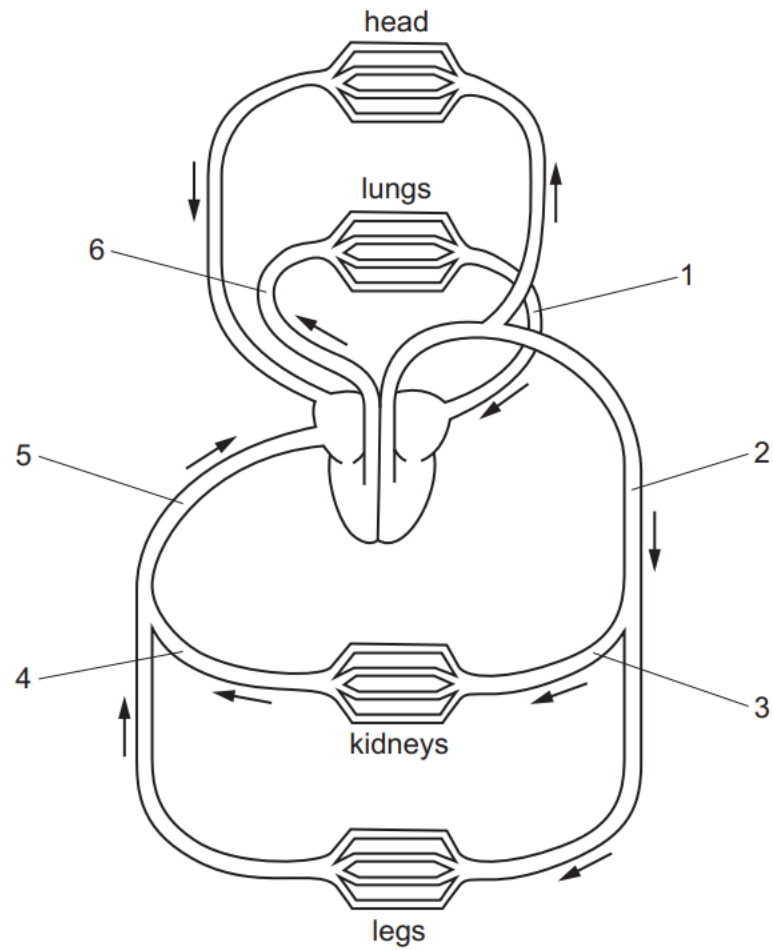
- 17 A sample of blood is taken from a patient and tested with serum containing antibody a and antibody b. The results of the test are shown below.

	serum with antibodies a	serum with antibodies b
blood sample		

Which of the following is a correct conclusion on the blood type of the patient?

- A** He can donate blood to another person of blood type AB.
- B** He can donate blood to another person of blood type O.
- C** His red blood cells contain antigen B.
- D** His red blood cells do not contain any antigens.

18 The diagram shows part of the human circulatory system.

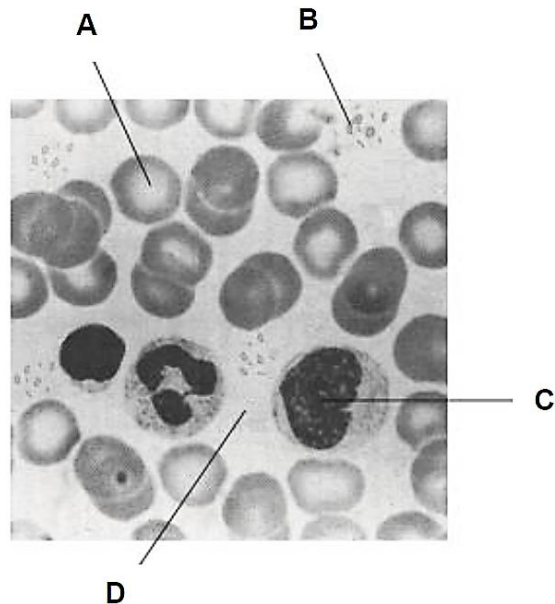


What are the numbered blood vessels?

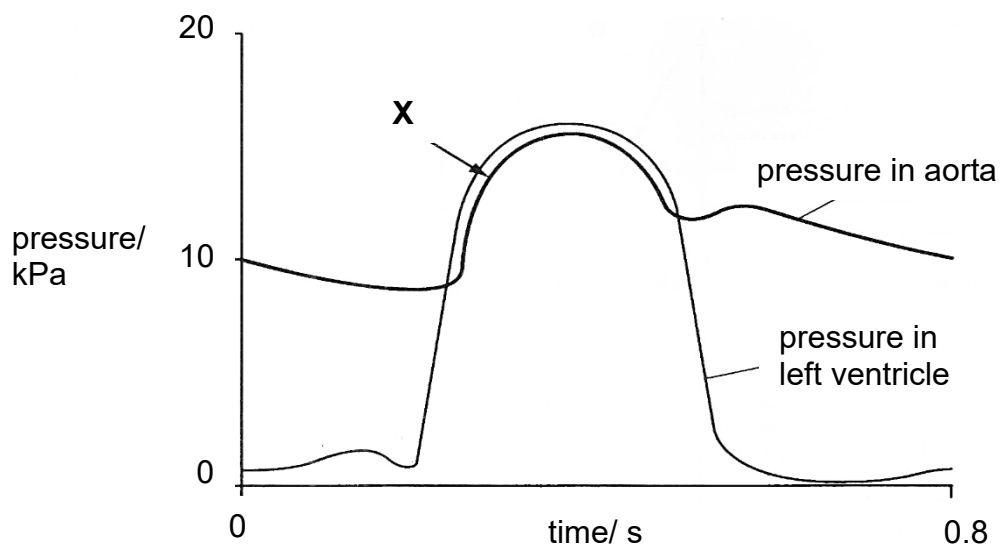
	vena cava	pulmonary vein	renal artery
A	5	6	4
B	2	1	3
C	5	1	3
D	2	6	4

- 19 The photomicrograph shows components present in human blood.

Which component will have its main function impaired if a person inhales carbon monoxide from tobacco smoke?



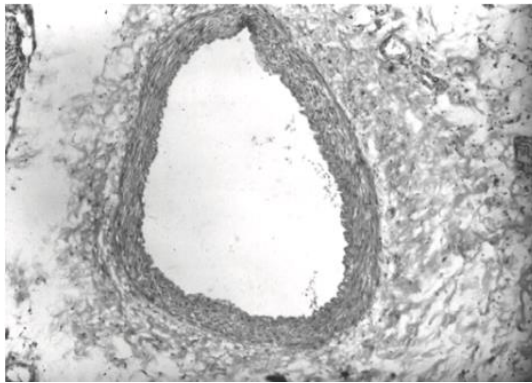
- 20 The diagram below shows changes in pressure in the aorta and the left ventricle during one cardiac cycle.



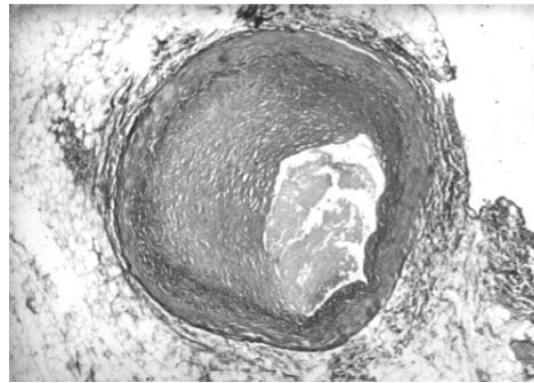
What causes the increase in pressure at point X?

- A closure of valves in aorta
- B closure of valves between left atrium and ventricle
- C contraction of left atrium
- D contraction of left ventricle

- 21 The photomicrographs below show transverse sections of arteries from a non-smoker and a smoker.



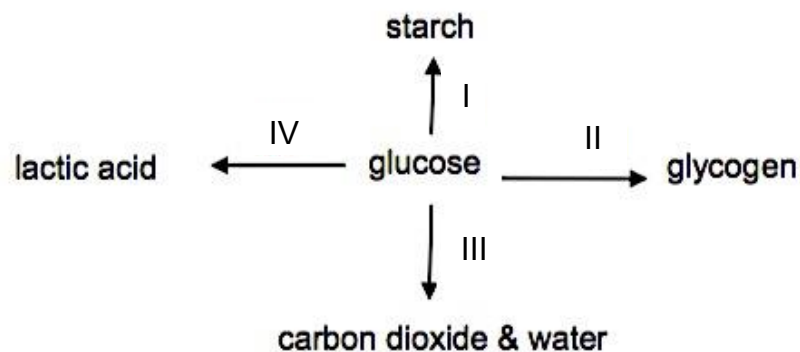
non-smoker



smoker

From the evidence above, which disease is most likely to occur in the smoker?

- A chronic bronchitis
 - B coronary heart disease
 - C emphysema
 - D lung cancer
- 22 The diagram below shows several reactions related to glucose.



Which of the following is correct with reference to the diagram above?

- A Reaction I is not found in animals.
- B Reaction II only occurs in muscle cells.
- C Reaction III occurs in the absence of oxygen.
- D Reaction IV occurs in the presence of oxygen.

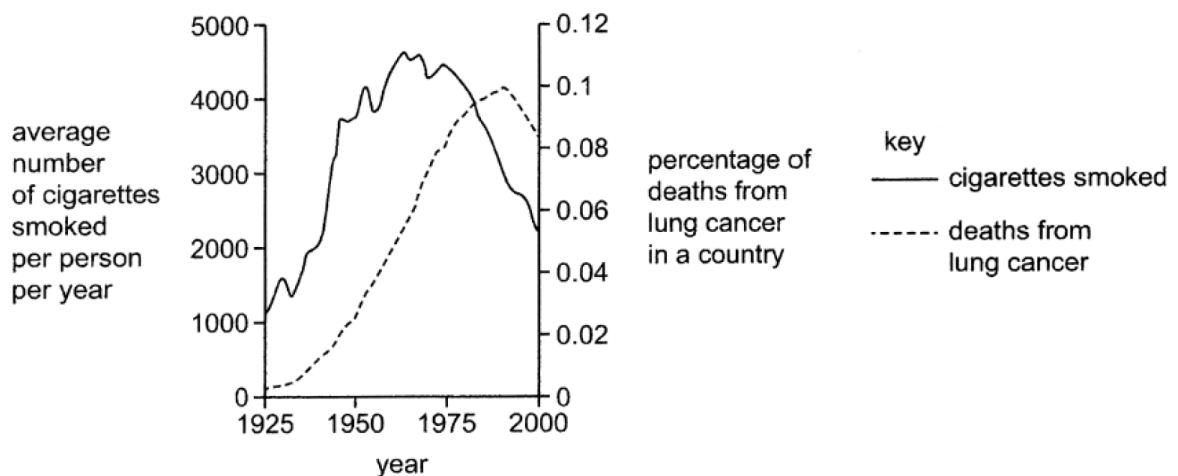
23 Some of the effects of smoking are listed.

- 1 paralysis of cilia
- 2 increases risk of cancer
- 3 increases blood pressure
- 4 increases risk of emphysema
- 5 reduces amount of oxygen in blood

Which effects are caused by tar?

- A** 1 and 2
B 2 and 4
C 1, 2 and 4
D 3, 4 and 5

24 The graph shows the number of cigarettes smoked and the percentage of deaths from lung cancer in a country from 1925 to 2000.

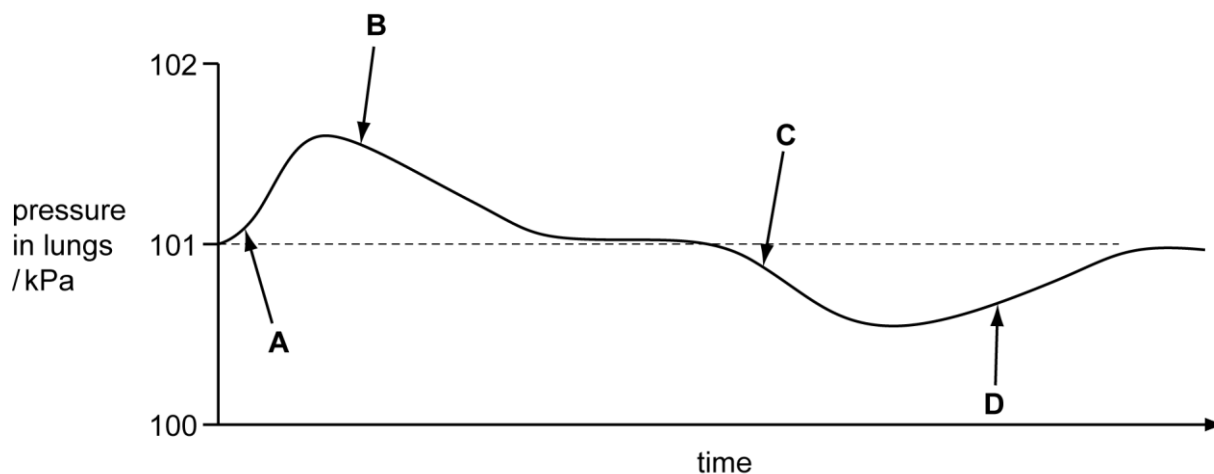


Which statement is supported by evidence from the graph?

- A** A cure for lung cancer was found in 1950.
B All smokers will get lung cancer.
C The number of cigarettes smoked increased between 1975 and 1990.
D There is a possible link between smoking and lung cancer.

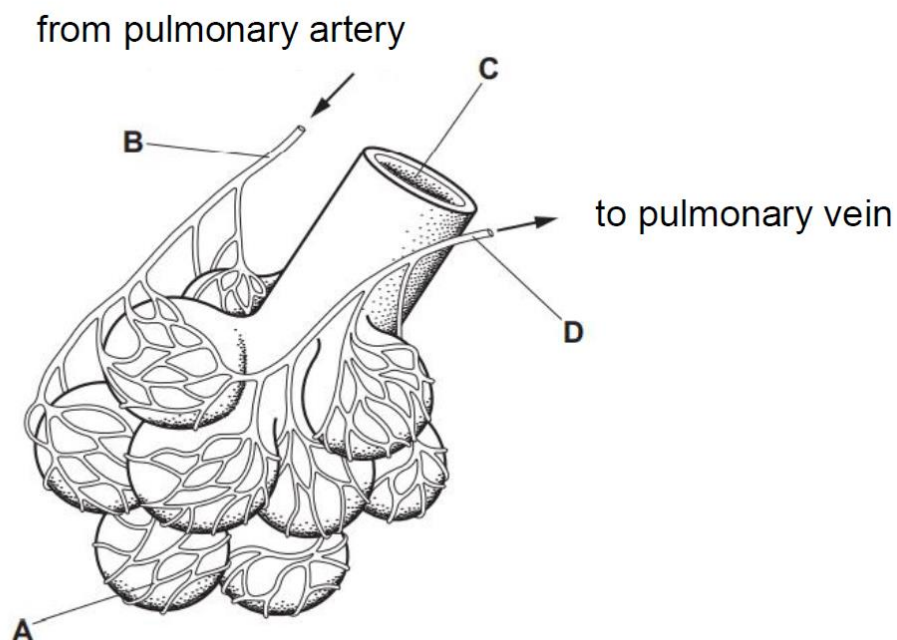
- 25** The diagram shows how pressure inside the lungs changes in one breathing cycle. Atmospheric pressure is 101 kPa.

At which point, **A**, **B**, **C** or **D**, is the diaphragm muscle beginning to contract?

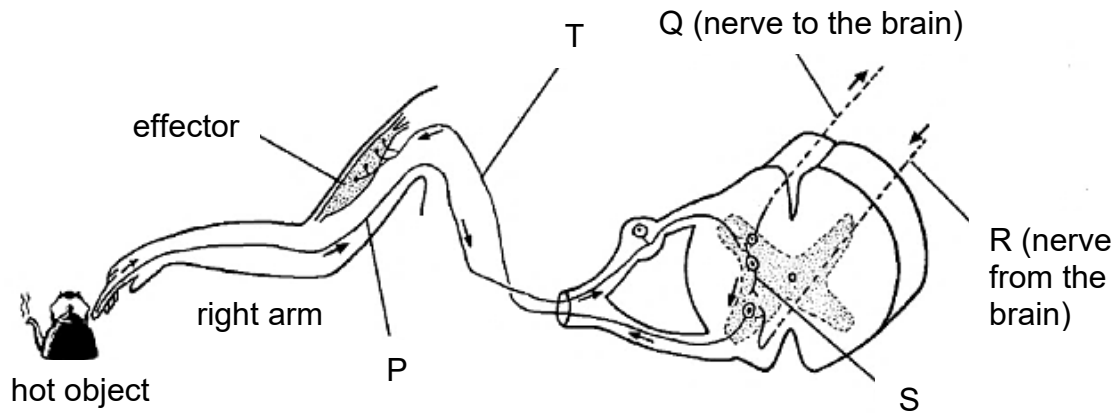


- 26** This diagram shows some of the structures in a human lung.

At which position is the carbon dioxide concentration the lowest?



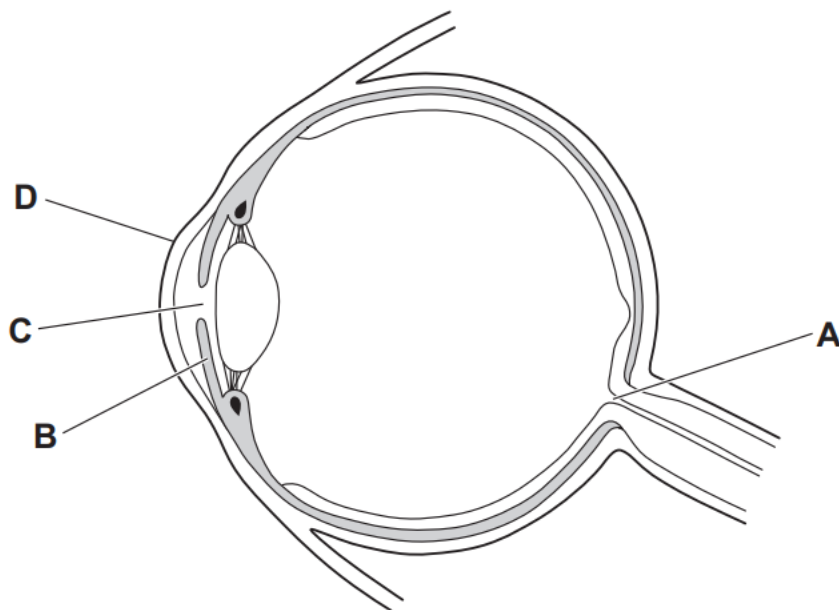
- 27** The diagram below shows the nervous pathway of a withdrawal reflex when a person touches a hot object. What would happen to the voluntary movement, reflex movement and sensation on the forearm if nerve Q was cut?



	voluntary movement	reflex movement	sensation
A	remains	lost	lost
B	lost	lost	remains
C	remains	remains	lost
D	lost	remains	remains

- 28** The diagram shows the structure of the human eye.

Which labelled part refracts light entering the eye?



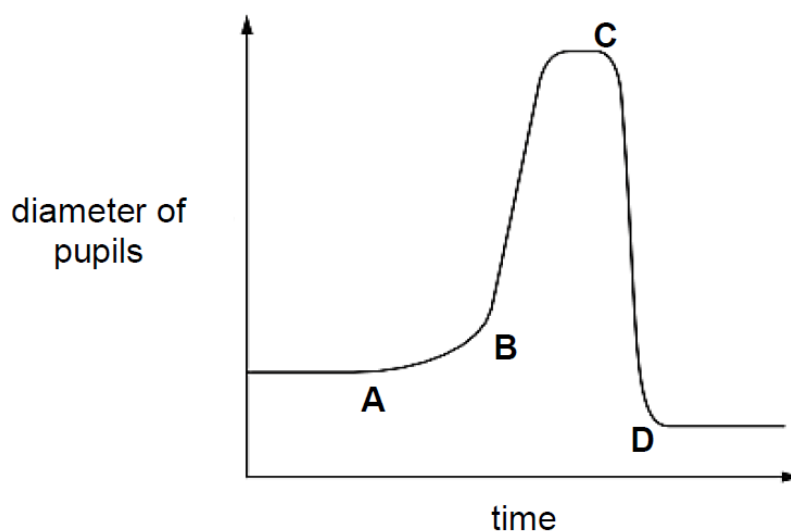
- 29** A specific eye condition can cause permanent contraction of the ciliary muscles.

Which row is correct for an eye with this condition compared to an eye without this condition?

	suspensory ligaments	refraction of light rays onto the retina
A	slack	less
B	slack	more
C	taut	less
D	taut	more

- 30** The graph shows changes in the diameter of a person's pupils while outdoors on a sunny day.

At which time did the person put on their sunglasses?



END OF PAPER 1

[Turn over