



Paya Lebar Methodist Girls' School (Secondary)
Preliminary Examination 2025
Secondary 4 Express / G3

CANDIDATE NAME		CLASS		CLASS INDEX NUMBER	
CENTRE NUMBER				INDEX NUMBER	

SCIENCE (BIOLOGY)

5088 / 01

Paper 1 Multiple Choice

25 August 2025

1 hour

Additional Materials: Multiple Choice Answer Sheet

[Taken with Sc Chemistry]

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

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

Write your name and index number on all the work you hand in.

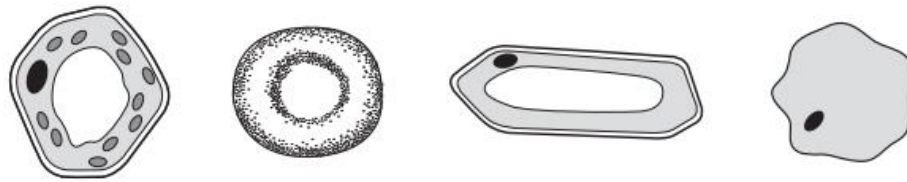
There are **twenty** multiple choice questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**.

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

- 1 The diagram below shows four different cells.



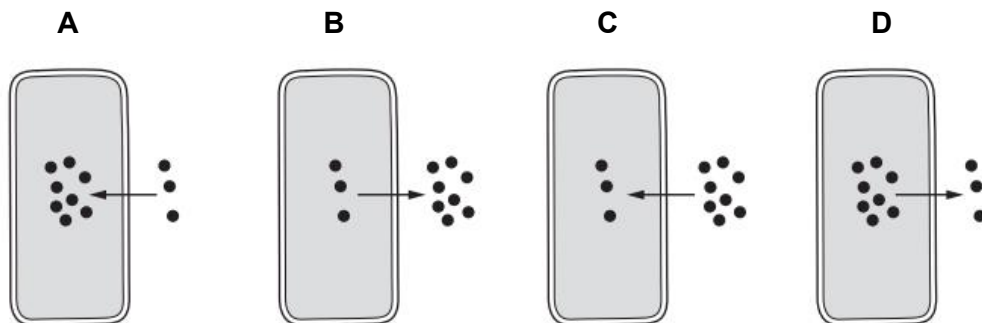
Which structure is found in all cells?

- A cell wall
 - B nucleus
 - C cell membrane
 - D chloroplast
- 2 Which of the following statements correctly describe both diffusion and osmosis?

- A They require energy from mitochondria.
- B They must move across a partially permeable membrane.
- C They can occur only in liquid state.
- D They involve the movement of particles down a concentration gradient.

- 3 The diagram below shows four different plant cells carrying out aerobic respiration.

Which of the following represents the movement of carbon dioxide molecules?



- 4 The key shows shapes representing small food molecules.

key

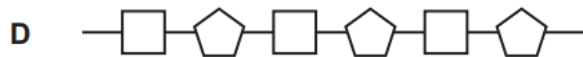
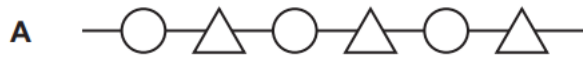
○ amino acid

⬠ fatty acid

△ glucose

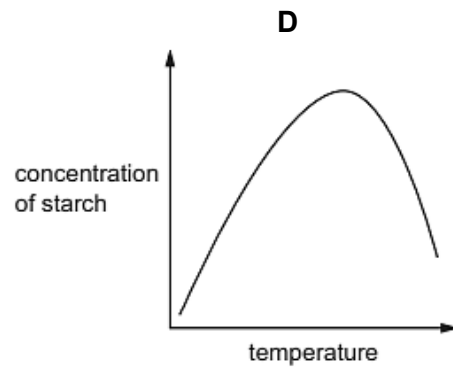
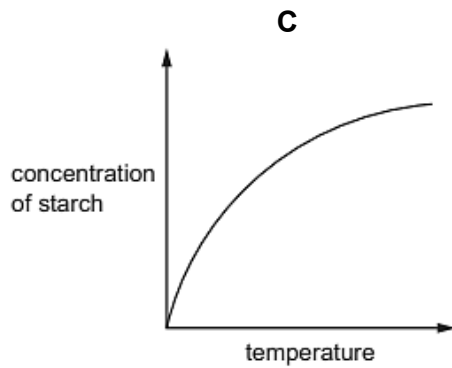
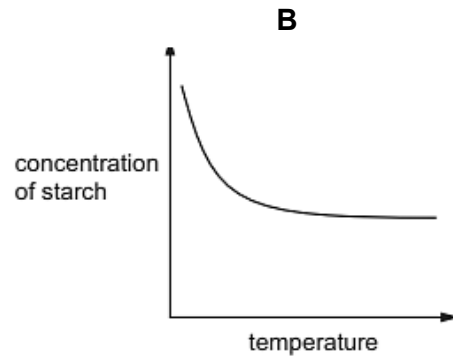
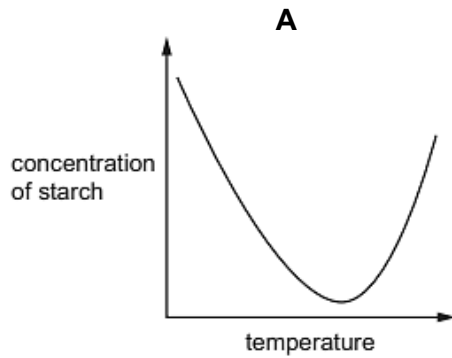
□ glycerol

Which diagram represents part of a cellulose molecule?



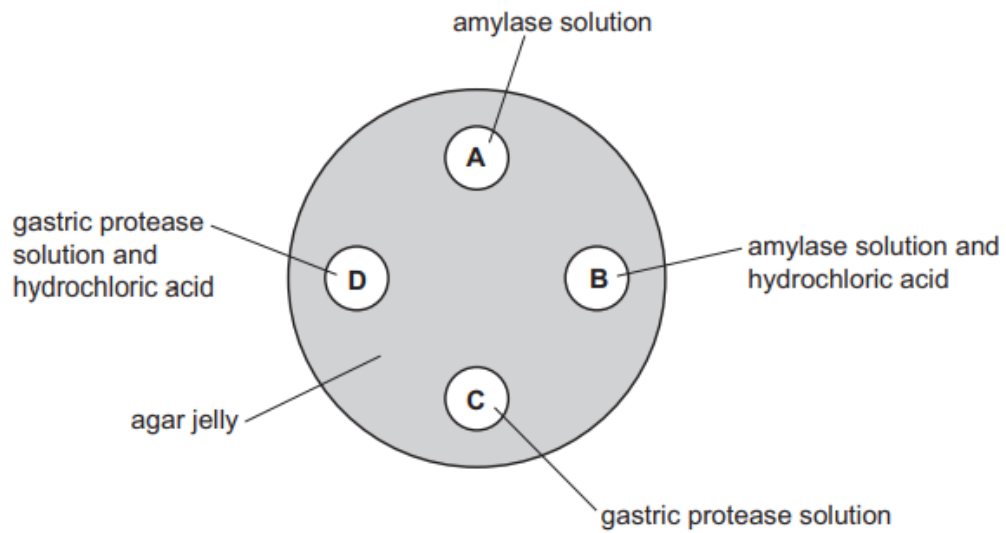
- 5 A group of students investigated the effects of temperature on starch digestion. Equal volumes of amylase and starch were added to the set-up where the temperature was increased from 10°C to 80°C over 20 minutes.

Which of the following shows the results of the experiment?

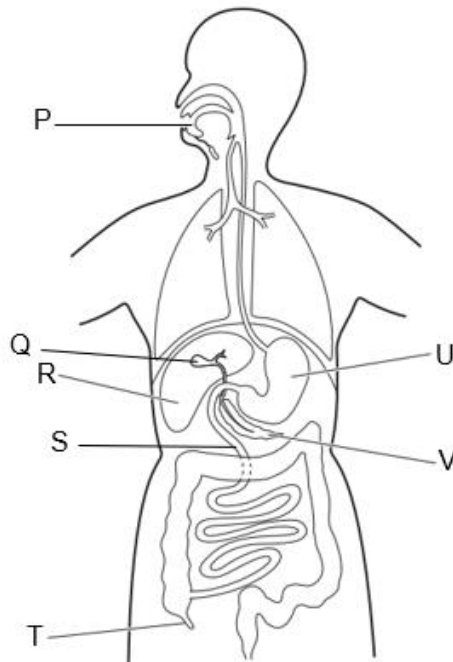


- 6 A dish is filled with agar jelly containing milk. Four holes were cut in the jelly, and each hole is filled as shown in the diagram.

After 30 minutes, which hole will be surrounded by the largest clear area?



- 7 The diagram below shows the human alimentary canal.



Which of the following organs produced substances involved in the digestion of fats?

- A** R, V and S
B U, Q, and S
C P, Q, V and R
D Q, R, V and T
- 8 The table shows the death rates from lung cancer in a country amongst smokers and non-smokers.

average number of cigarettes smoked per day	deaths from lung cancer per year per 100 000 people
0	10
1–14	78
15–25	127
26 or more	251

What can be concluded from the data?

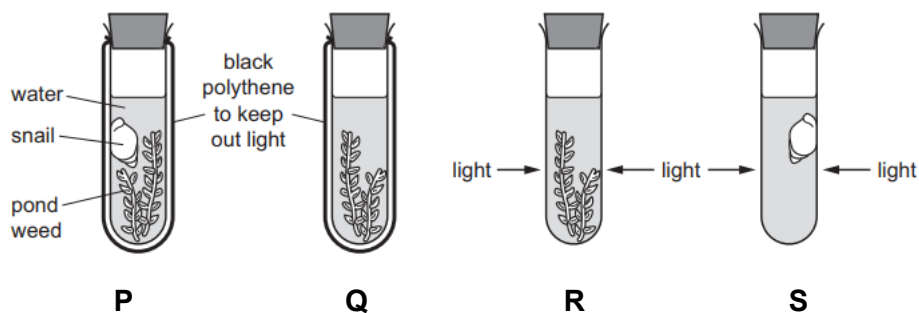
- A** People who smoke 26 or more cigarettes per day die from lung cancer.
B People who do not smoke will not get lung cancer.
C People who smoke more have a higher chance of getting lung cancer.
D Smoking is the leading cause of lung cancer.

9 Which statement(s) about aerobic respiration is/are correct?

- 1 Aerobic respiration releases more energy per molecule of glucose than anaerobic respiration.
- 2 The waste products of aerobic respiration are carbon dioxide and lactic acid.
- 3 Aerobic respiration requires oxygen.

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

10 The diagram shows an experiment to investigate the effect of light on respiration and photosynthesis.



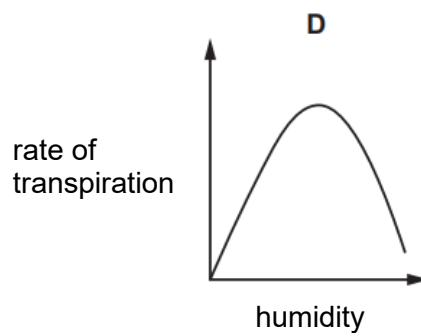
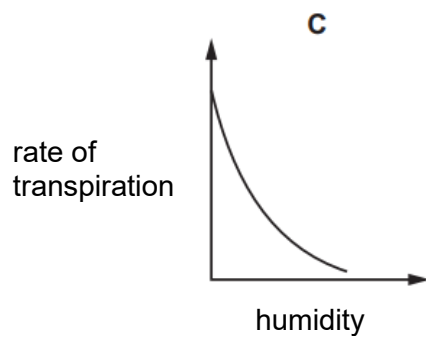
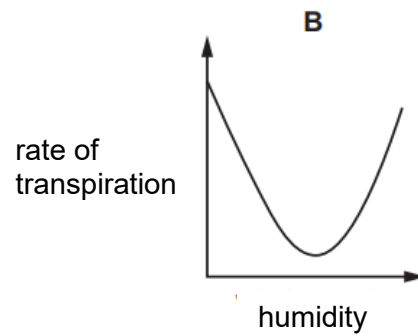
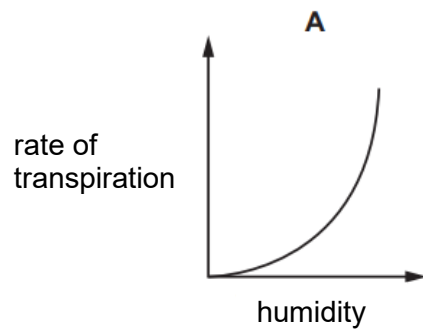
The plants were placed in hydrogen carbonate indicator which shows the following colour changes:

colour	concentration of carbon dioxide
yellow	high
red	atmospheric
purple	low

Which of the following shows the correct colour change at the end of the experiment?

	P	Q	R	S
A	yellow	yellow	purple	yellow
B	purple	purple	red	red
C	red	yellow	purple	yellow
D	yellow	red	red	purple

- 11 Which of the following shows the effect of humidity on the rate of transpiration?

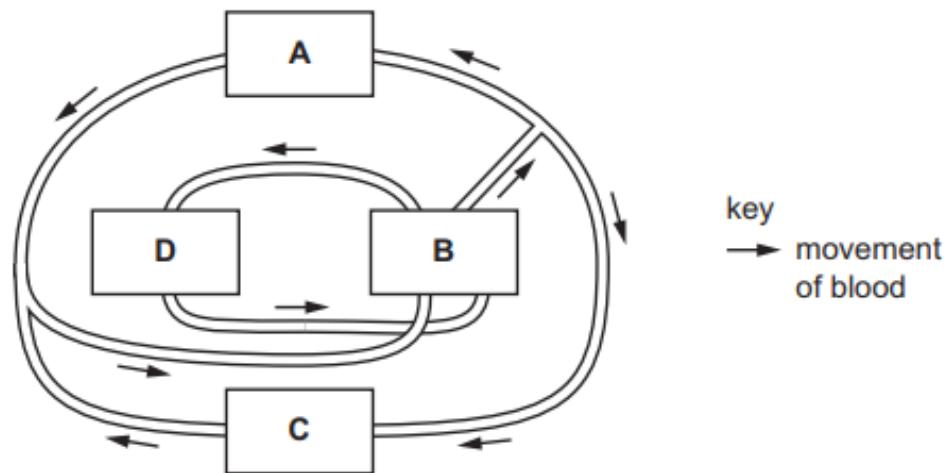


- 12 Which of the following blood vessels carries oxygenated blood?

- A** pulmonary artery and aorta
- B** renal artery and hepatic vein
- C** vena cava and hepatic portal vein
- D** pulmonary vein and aorta

- 13 The diagram represents a simplified human circulatory system.

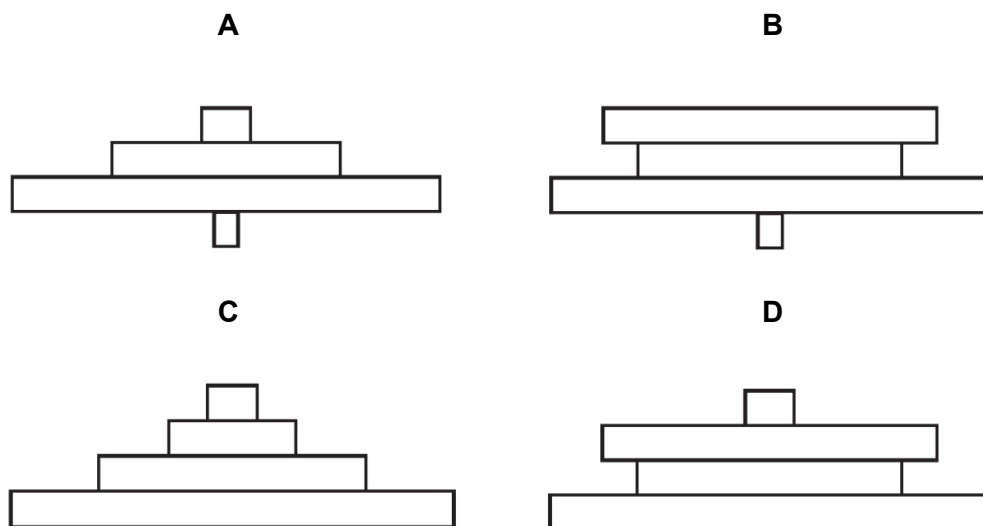
Which structure represents the heart?



- 14 The diagram below shows a food chain.

apple tree → caterpillar → songbird → hawk

Which of the following shows the correct pyramid of numbers?



15 Which of the following would antibiotics be effective against?

- A influenza
- B pneumococcal
- C human immunodeficiency virus
- D lung cancer

16 It was found that cytosine forms 34% of DNA molecules.

What percentage of the bases would be thymine?

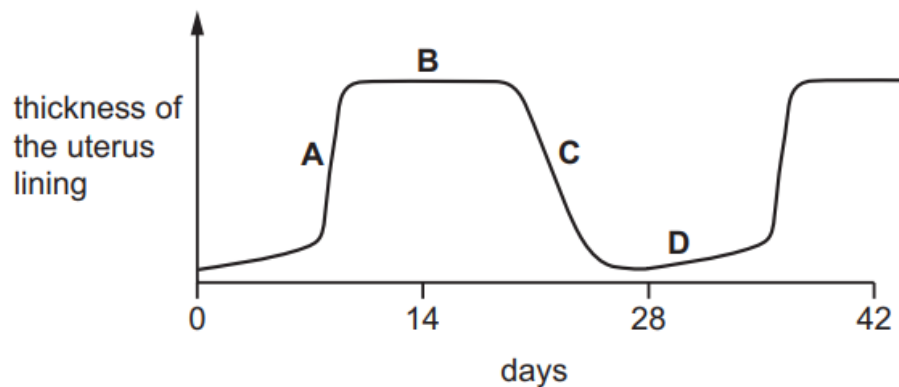
- A 16%
- B 32%
- C 34%
- D 68%

17 Which of the following human phenotypes is caused by genes only?

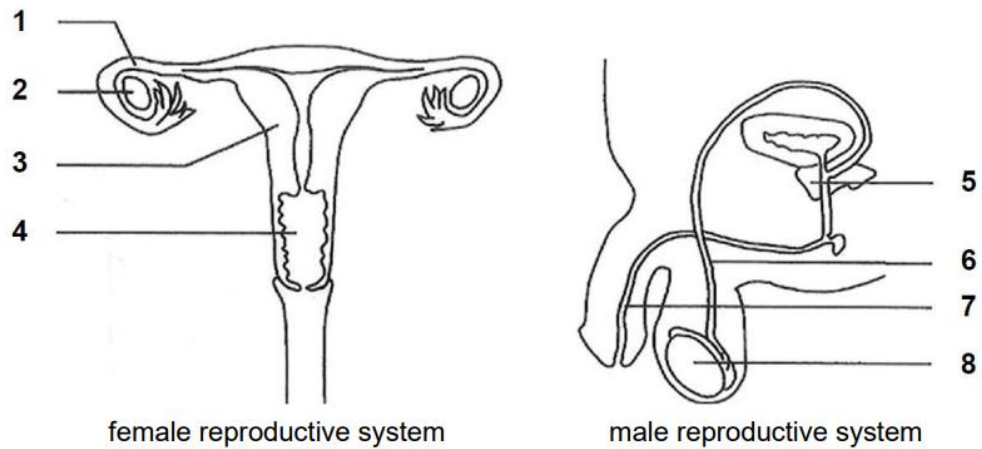
- A skin colour
- B height
- C body mass
- D ability to roll tongue

18 The diagram shows the changes in the thickness of the uterus lining of a woman during her menstrual cycle.

Which of the following shows the fertile period of the woman?



- 19 The diagram below shows the female and male reproductive systems.



Which of the following has similar function?

- A 1 and 5
 - B 3 and 7
 - C 4 and 6
 - D 2 and 8
- 20 The allele for sickle cell anemia is recessive. Two heterozygous parents have three children, two girls and a boy who do not express the trait.

What is the chance that the next child is a boy who expresses the trait?

- A 6.25%
- B 12.5%
- C 25%
- D 50%

END OF PAPER