

# EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

**Biology**

**5090/1**

**Paper 1 Multiple Choice**

**Tuesday**

**30 OCTOBER 2018**

**Additional Materials:**

- Multiple Choice answer sheet
- Soft clean eraser
- Soft pencil (type B or HB is recommended)

**Time: 50 minutes**

**Instructions to Candidates**

Look at the left hand side of your Answer card. Ensure that your **name**, the **school/centre name** and **subject paper** are printed. Also ensure that the **subject code**, **paper number**, **centre code**, **your examination number** and the **year** are printed and shaded. Do not change the already printed information.

There are **forty (40)** 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 Answer Card provided.

Read very carefully the instructions on the answer sheet.

**Information for Candidates**

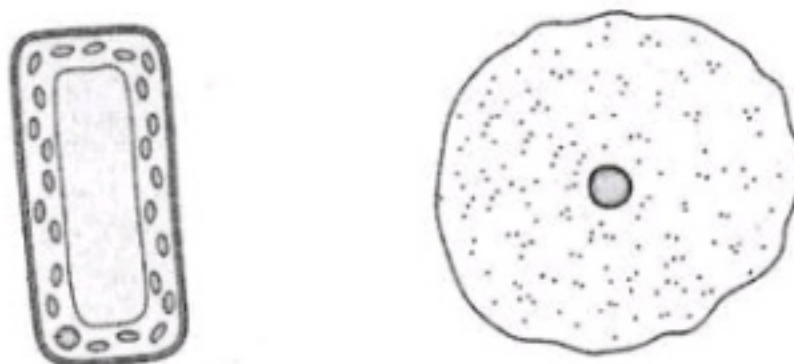
Each correct answer will score one mark.

Any rough working should be done in this Question Paper.

**Cell phones are not allowed in the examination room.**



- 1 Which of the following characteristics of living organisms is defined as the ability to detect and respond to stimuli?
- A Irritability
  - B Movement
  - C Nutrition
  - D Respiration
- 2 The diagram below shows two different cells.



Which feature is found in both of the cells?

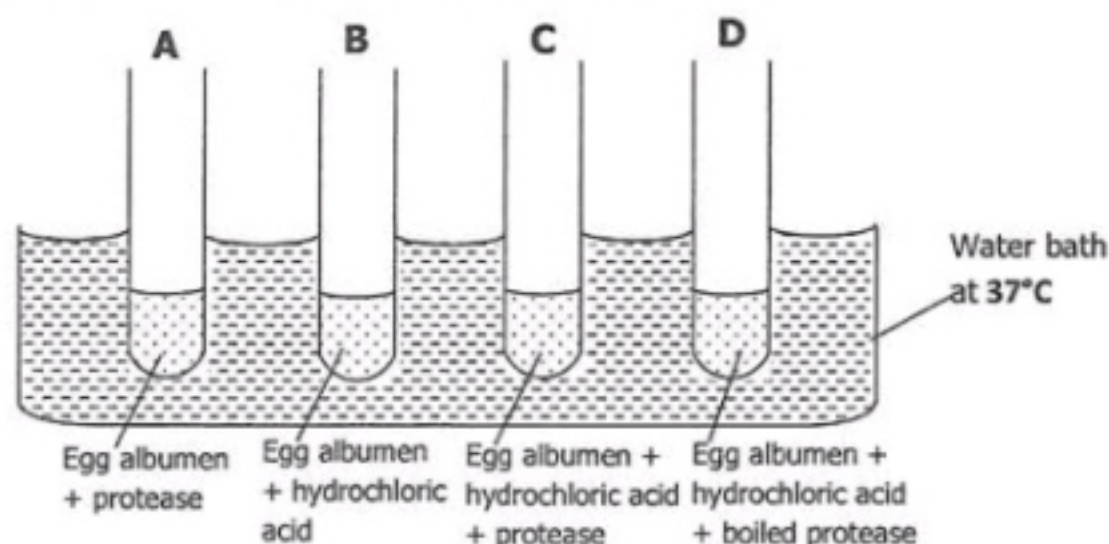
- A Cell membrane
  - B Cell wall
  - C Central vacuole
  - D Chloroplasts
- 3 A piece of plant tissue is transferred from a beaker of pure water into a beaker containing 20% salt solution. Which of the following correctly explains what happened in this experiment?

	<b>Movement of water</b>	<b>Volume of tissue cells</b>
A	Enters the cells	Decreases
B	Enters the cells	Increases
C	Leaves the cells	Decreases
D	Leaves the cells	Increases



- 4 The diagram below shows an experiment on the digestion of protein in egg albumen by protease. The protease was taken from the stomach of a human being.

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



- 5 Different food samples were tested for their nutrient content. The test results were recorded in the table below.

Which food sample contained both glucose and oil?

Food	Benedict's test	Biuret test	Ethanol emulsion test	Iodine test
A	✓	✓	X	X
B	✓	X	✓	X
C	X	✓	X	✓
D	X	X	✓	X

Key

✓ = nutrient present

X = nutrient absent

- 6 The table below shows the amount of protein and fat in a 100g sample of some foods.

Foods	Protein(g)	Fat(g)
Meat	18.0	17.0
Bread	9.0	1.5
Fish	18.0	0.5
Eggs	13.0	11.0
Potato chips	4.0	9.0

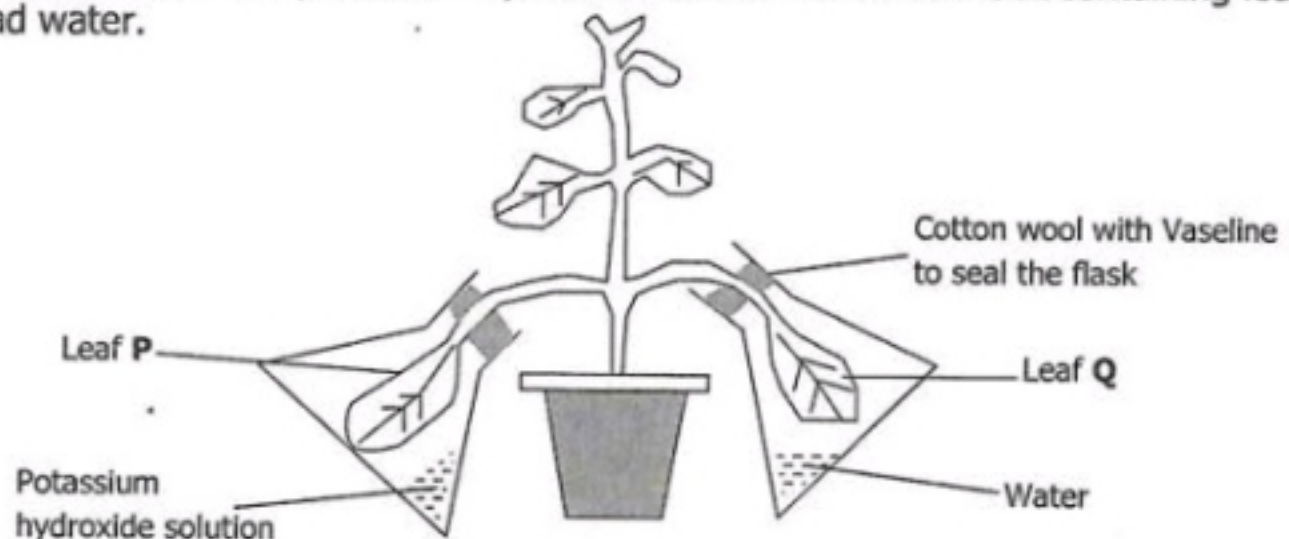
Which foods have the best value for body building?

- A Bread and meat
- B Bread and potato chips
- C Meat and eggs
- D Meat and fish

- 7 What are the effects of lack of magnesium ions and nitrate ions to plant growth?

	Lack of magnesium ions	Lack of nitrate ions
A	Leaves go yellow between the veins	Unable to form enzymes
B	Roots lack root hairs	Overall growth stunted
C	Unable to form amino acids	Unable to form glucose
D	Unable to form cellulose	Oldest leaves turn yellow

- 8 The diagram below shows an experiment to investigate photosynthesis. The flask containing leaf P had potassium hydroxide solution while the flask containing leaf Q had water.



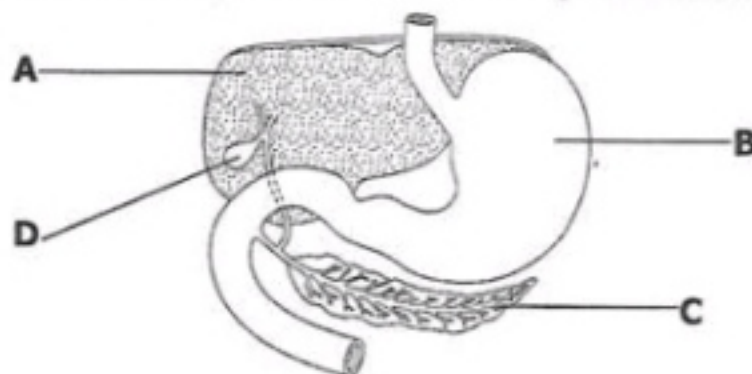
After exposing the potted plant to sunlight for 10 hours, leaf P had no starch while leaf Q contained a lot of starch. What does this show?

A leaf cannot make starch ...

- A in a sealed flask.
  - B without carbon dioxide.
  - C without sunlight.
  - D without oxygen.
- 9 What do we call the type of symbiotic relationship in which one species benefits from another species without either harming or benefiting that other species?
- A Amensalism
  - B Commensalism
  - C Mutualism
  - D Parasitism
- 10 Which part of the tooth is the hardest?
- A Cement
  - B Dentine
  - C Enamel
  - D Pulp cavity

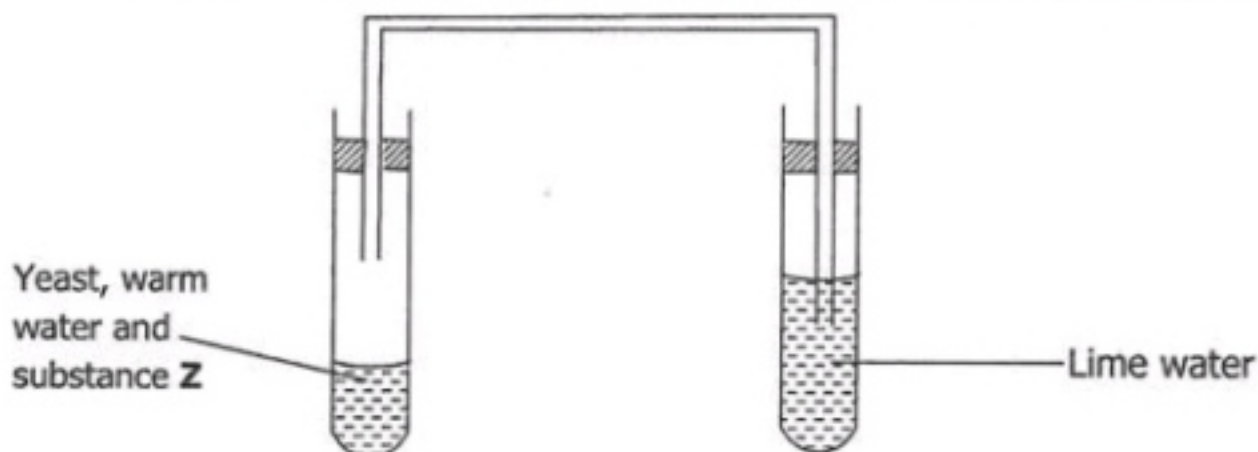


- 11 The diagram below shows part of the alimentary canal in human beings.



Which of the labelled parts produces an acidic juice?

- 12 Gaseous exchange in an insect is mostly achieved by ...
- A active transport.
  - B breathing.
  - C diffusion.
  - D osmosis.
- 13 Yeast, warm water and substance Z were put in a test-tube. The apparatus was then set up as shown below. After a while, the lime water began to go cloudy.

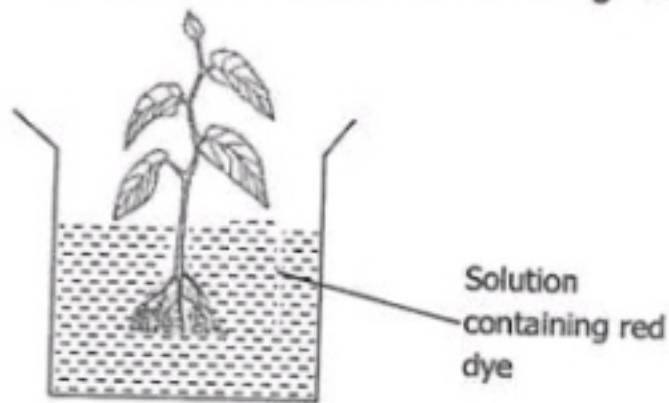


What is substance Z?

- A Alcohol
  - B Carbondioxide
  - C Glucose
  - D Oxygen
- 14 Which of the following is **not** a myth about HIV and AIDS? It is transmitted by ...
- A casual shaking of hands.
  - B hugging.
  - C sexual intercourse.
  - D talking to infected people.

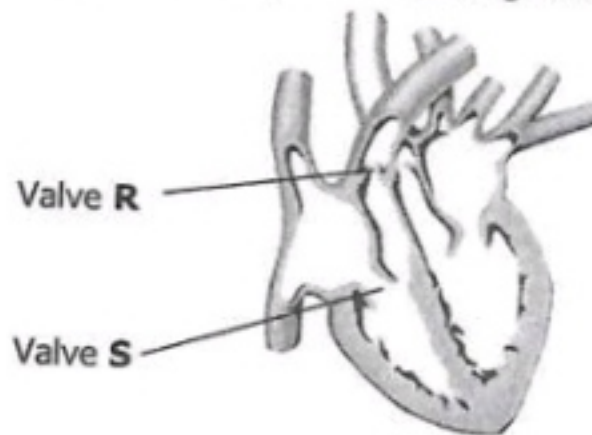


- 15 Roots of a seedling were placed in a solution containing red dye as shown below.



What was the path of the red dye after it had entered the roots?

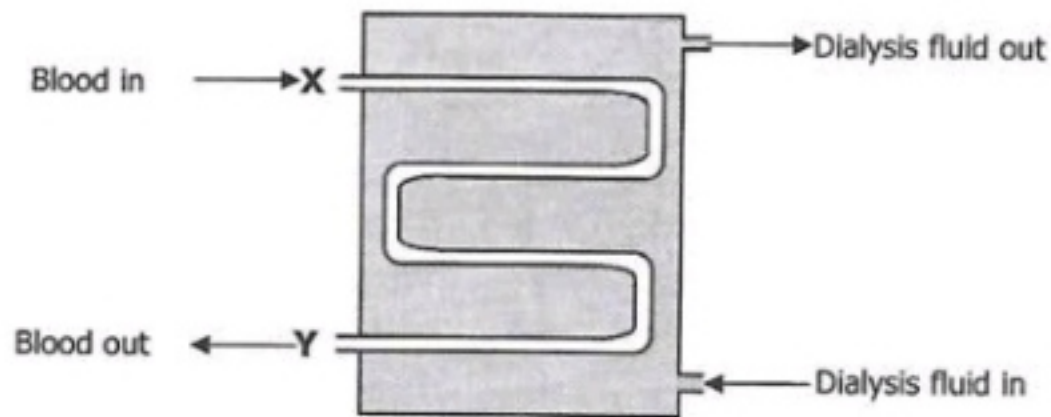
- A Phloem in root → phloem in stem.
  - B Phloem in root → xylem in stem.
  - C Xylem in root → phloem in stem.
  - D Xylem in root → xylem in stem.
- 16 Which component of blood helps it to absorb huge amounts of oxygen?
- A Plasma proteins
  - B Platelets
  - C Red blood cells
  - D White blood cells
- 17 The diagram below shows a section through the human heart.



What happens to the valves **R** and **S** as blood leaves the right ventricle?

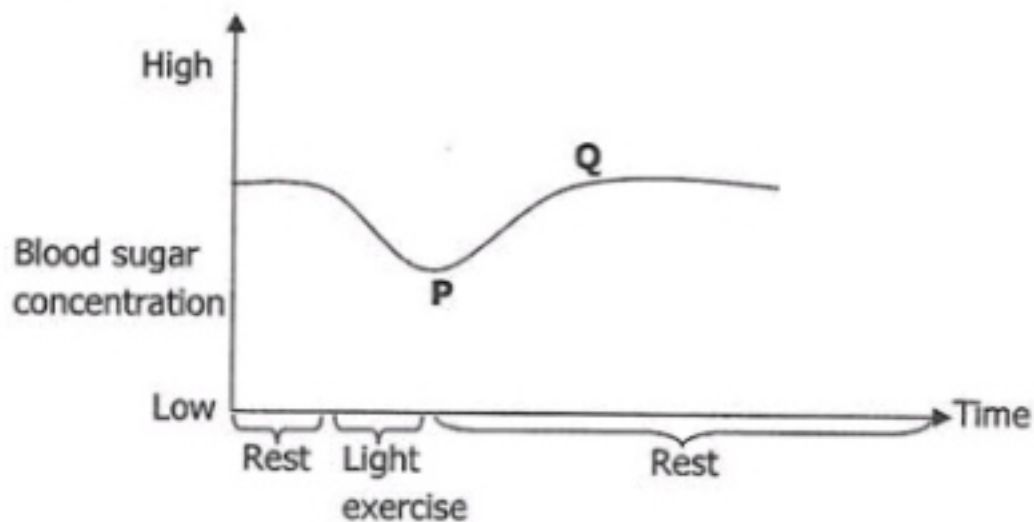
	<b>R</b>	<b>S</b>
<b>A</b>	Closes	Closes
<b>B</b>	Closes	Opens
<b>C</b>	Opens	Closes
<b>D</b>	Opens	Opens

- 18 The diagram below shows a simple dialysis machine.



The substance in blood at **X** which should **not** be found in blood at **Y** is ...

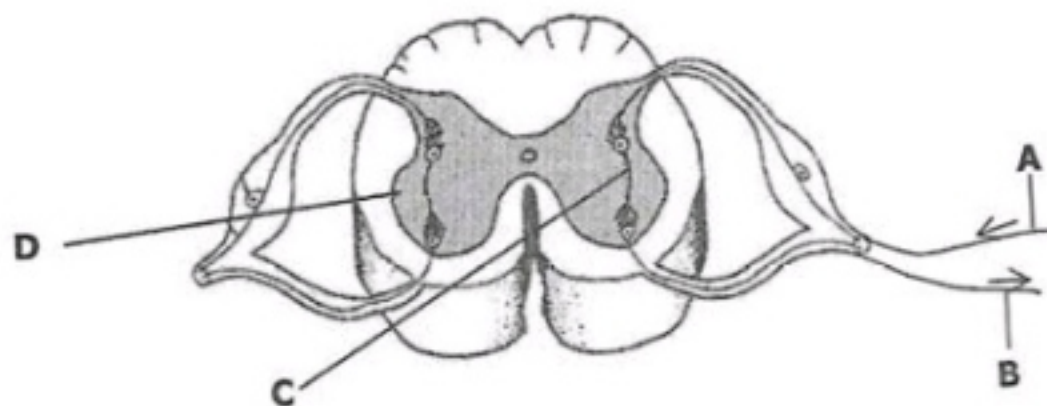
- A amino acids.
  - B fatty acids.
  - C glucose.
  - D urea.
- 19 The graph shows the changes in blood sugar concentration during periods of rest and light exercise.



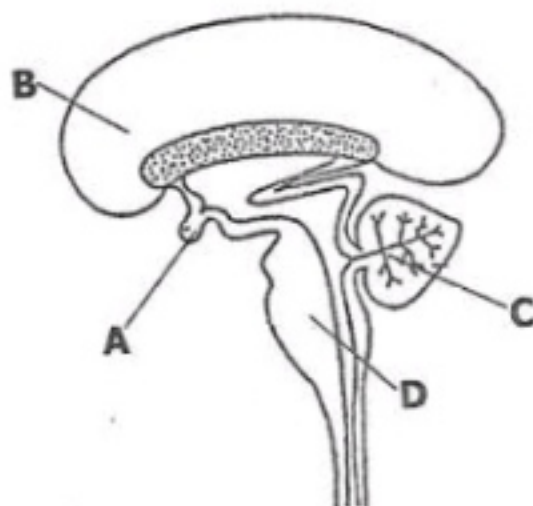
Which of the following could have caused the change in blood sugar level between **P** and **Q**?

- A Glucagon released by the liver.
- B Glucose released by the liver.
- C Glycogen released by the muscles.
- D Insulin released by the pancreas.

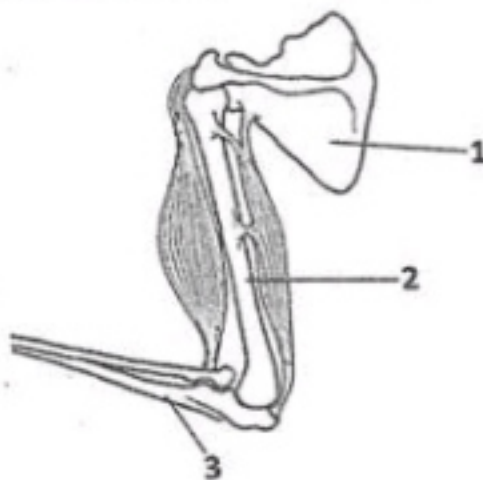
- 20 The diagram below shows a reflex arc.



- Which structure is a motor neurone?
- 21 The diagram below shows a section through the human brain.



- Which part controls balance and muscular coordination?
- 22 What is the function of the Eustachian tube in an ear?
- A To direct excess sounds out of the ear.
  - B To equalise the air pressure on the ear drum.
  - C To maintain the posture of the body.
  - D To transmit sounds from the pharynx to the ear.
- 23 The following diagram shows the bones of a human arm.

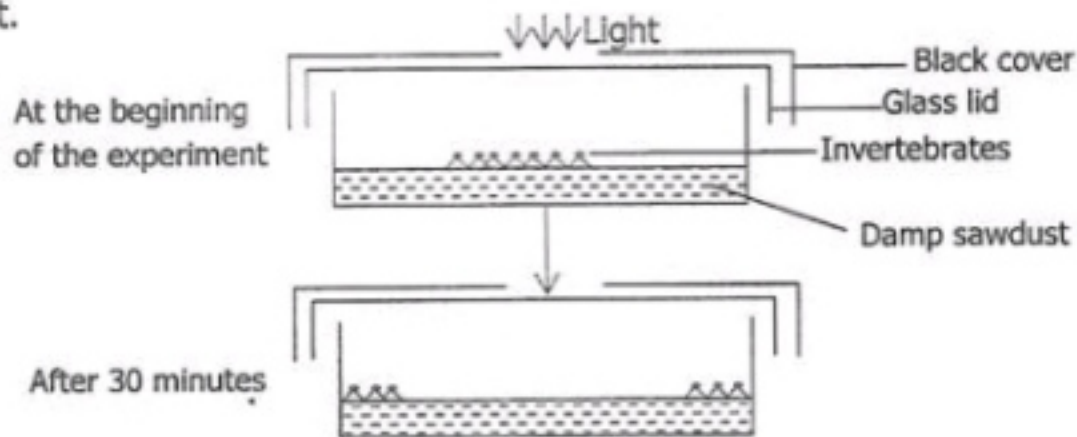




What are the numbered bones?

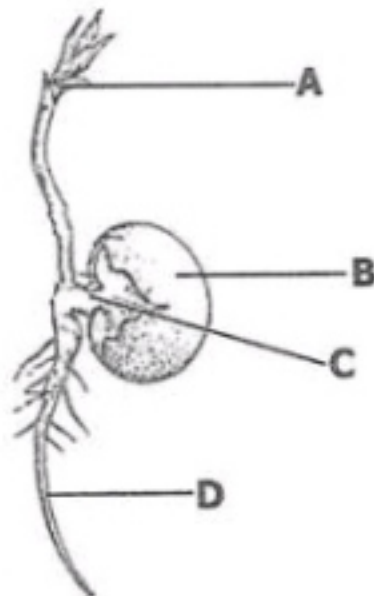
	1	2	3
A	Humerus	Radius	Ulna
B	Humerus	Scapula	Radius
C	Scapula	Humerus	Radius
D	Scapula	Humerus	Ulna

- 24 The following diagram shows invertebrates in a glass container and exposed to light.



Which response is exhibited by these invertebrates?

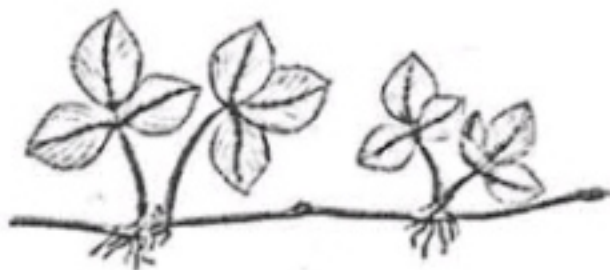
- A Negative phototaxis.
  - B Negative phototropism.
  - C Positive phototaxis.
  - D Positive phototropism.
- 25 The diagram below shows a seedling.



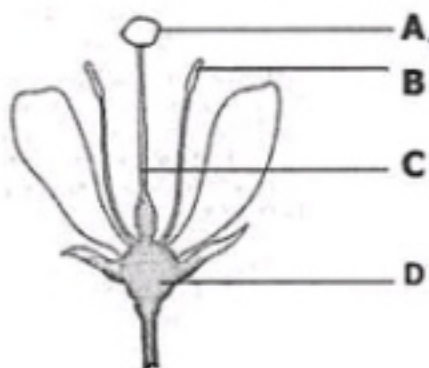
Which part is the plumule?



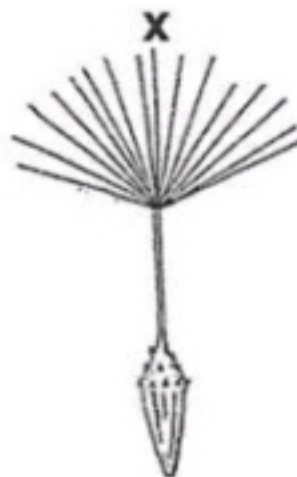
- 26 In addition to suitable temperature, which other factors are necessary for seed germination?
- A Carbon dioxide and sunlight
  - B Mineral ions only
  - C Sunlight only
  - D Water and oxygen
- 27 Which method of natural propagation is illustrated in the diagram below?



- A Corms
  - B Rhizomes
  - C Runners
  - D Suckers
- 28 The following diagram shows a longitudinal section of a flower. On which structure would pollen grains be deposited?



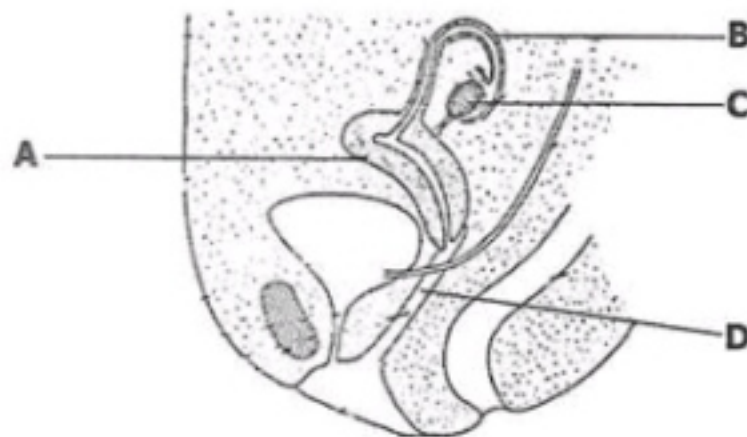
- 29 The diagram below shows two fruits.



How are these fruits dispersed?

	W	X
A	Animals	Animals
B	Animals	Wind
C	Wind	Animals
D	Wind	Wind

- 30 The diagram below shows the side view of a female reproductive system.



In which labelled part is the zygote formed?

- 31 The diagram below shows a calendar for March and April with four days shaded.

		March				April			
S		7	14	21	28	4	11	18	25
M	1	8	15	22	29	5	12	19	26
T	2	9	16	23	30	6	13	20	27
W	3	10	17	24	31	7	14	21	28
T	4	11	18	25	1	8	15	22	29
F	5	12	19	28	2	9	16	23	30
S	6	13	20	27	3	10	17	24	

Menstruation for a woman started on March 14<sup>th</sup>. During which of the shaded days was the lining of the uterus at its thickest and richest in blood vessels?

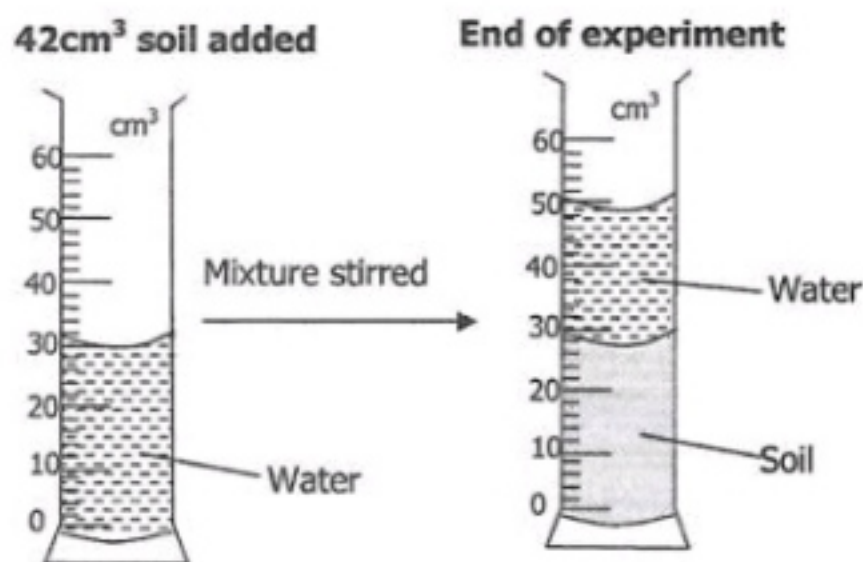
- A March 10<sup>th</sup>  
 B March 15<sup>th</sup>  
 C March 24<sup>th</sup>  
 D April 15<sup>th</sup>
- 32 Which method of contraception is the most effective in preventing the spread of diseases such as syphilis and AIDS?
- A Diaphragm  
 B Male condom  
 C Oral contraceptive pills  
 D Spermicides



- 33 Which of the following is obtained when a diploid cell undergoes meiosis?
- A Genetically different diploid cells.
  - B Genetically different haploid cells.
  - C Genetically identical diploid cells.
  - D Genetically identical haploid cells.
- 34 A pure breeding tall plant was crossed with a pure breeding dwarf plant of the same species. The resulting seeds were collected and grown to produce the next generation.
- What were the approximate percentages of the tall and dwarf offspring?

	% of tall offspring	% of dwarf offspring
A	100	0
B	75	25
C	50	50
D	25	75

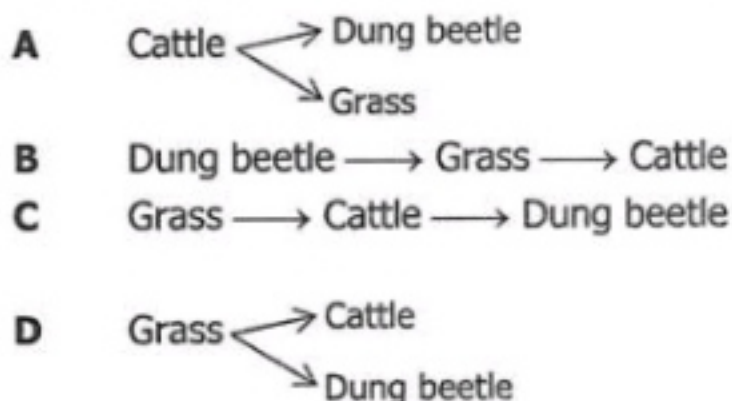
- 35 What is the correct order of arthropods, from those with the most legs to those with the fewest legs?
- A Arachnids → crustaceans → insects → myriapods.
  - B Crustaceans → myriapods → insects → arachnids.
  - C Insects → arachnids → myriapods → crustaceans.
  - D Myriapods → crustaceans → arachnids → insects.
- 36 The following diagram shows an experiment conducted to find the proportion of one component in a soil sample.



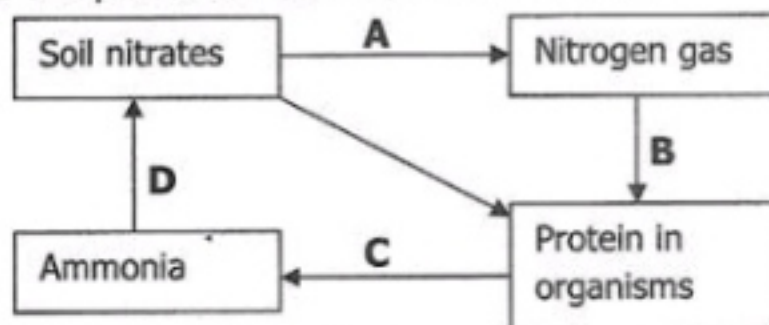
What component of the soil is being investigated?

- A Air
- B Humus
- C Sand
- D Water

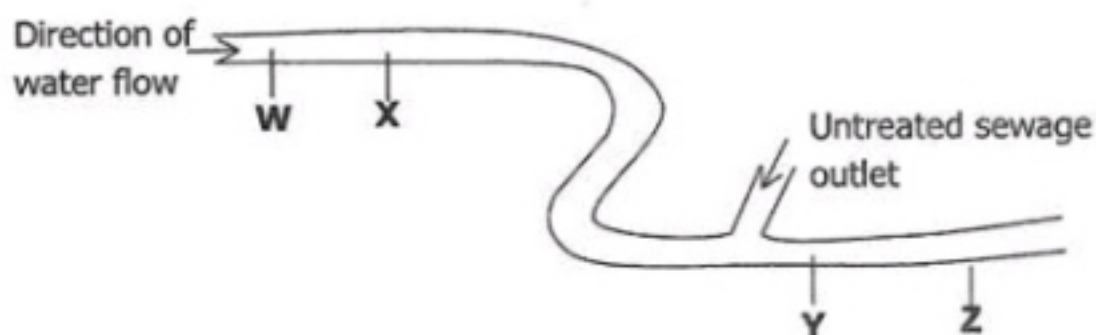
- 37** Dung beetles lay their eggs in the dung of plant eating mammals like cattle. Both the adult beetles and their young stages eat the undigested food in the dung. Which of the following shows this feeding relationship?



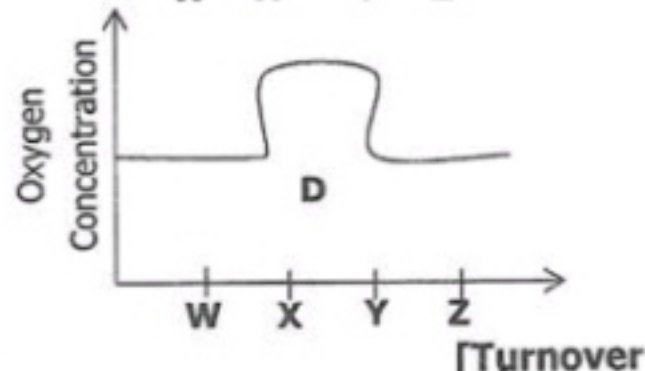
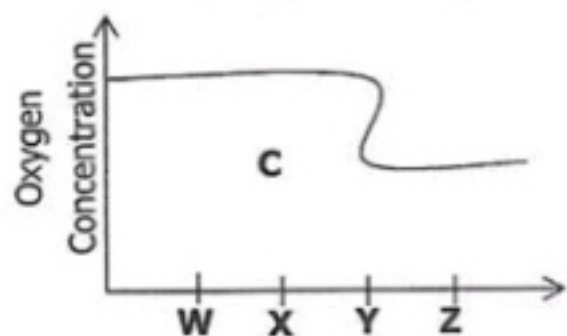
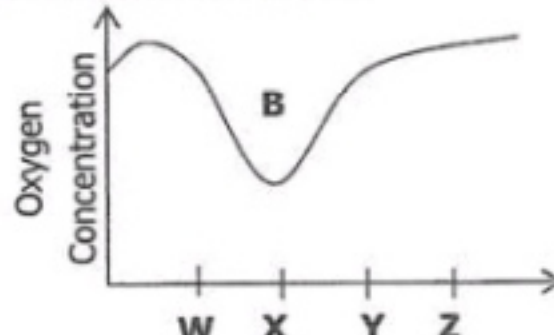
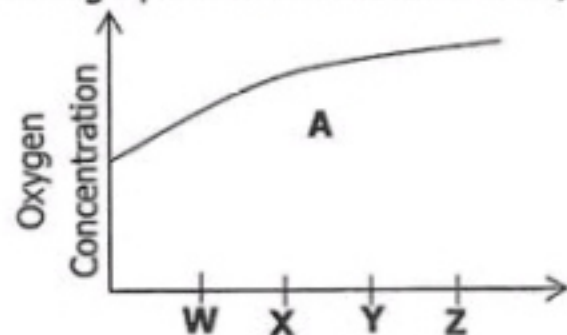
- 38** The diagram below shows part of a nitrogen cycle. Which of the processes labelled is nitrification?



- 39** The diagram below shows four positions on a river where water samples were taken.



Which graph best describes the oxygen concentrations in the river?



- 40** Which of the following must be controlled to protect the habitat of an endangered species?
- A**     Decomposition
  - B**     Nitrogen fixation
  - C**     Pollution
  - D**     Rainfall