

EXAMINATIONS COUNCIL OF ZAMBIA

**Joint Examination for the School Certificate
and General Certificate of Education Ordinary Level**

BIOLOGY

5090/1

PAPER 1 Multiple Choice

Friday

2 NOVEMBER 2012

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

TIME: 50 Minutes

INSTRUCTIONS TO CANDIDATES

Do not open this Question Paper until you are told to do so.

Write your name, centre number and candidate number on the Answer Sheet in the spaces provided unless this has already been done for you.

There are **forty** 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.

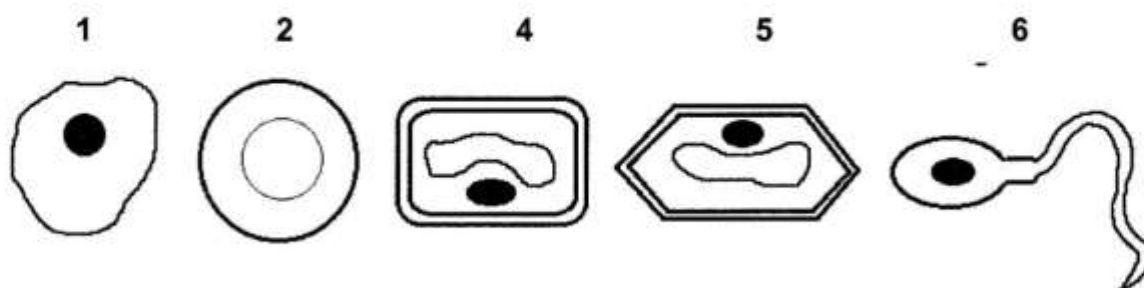
Read very carefully the instructions on the Answer Sheet.

INFORMATION FOR CANDIDATES

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 Question Paper.

Cell phones are not allowed in the examination room.

- 1 The diagrams below show five different cells as seen through a microscope.



Which two cells are plant cells?

- A 1 and 2
B 2 and 3
C 3 and 4
D 4 and 5
- 2 The table shows the presence (✓) or absence (X) of characteristics possessed by animals. Which row shows the characteristics of insects?

Animal	Jointed legs	Compound eyes	Chord (Ventral)	Soft body
A	✓	X	✓	✓
B	✓	X	X	✓
C	X	✓	X	✓
D	✓	✓	✓	X

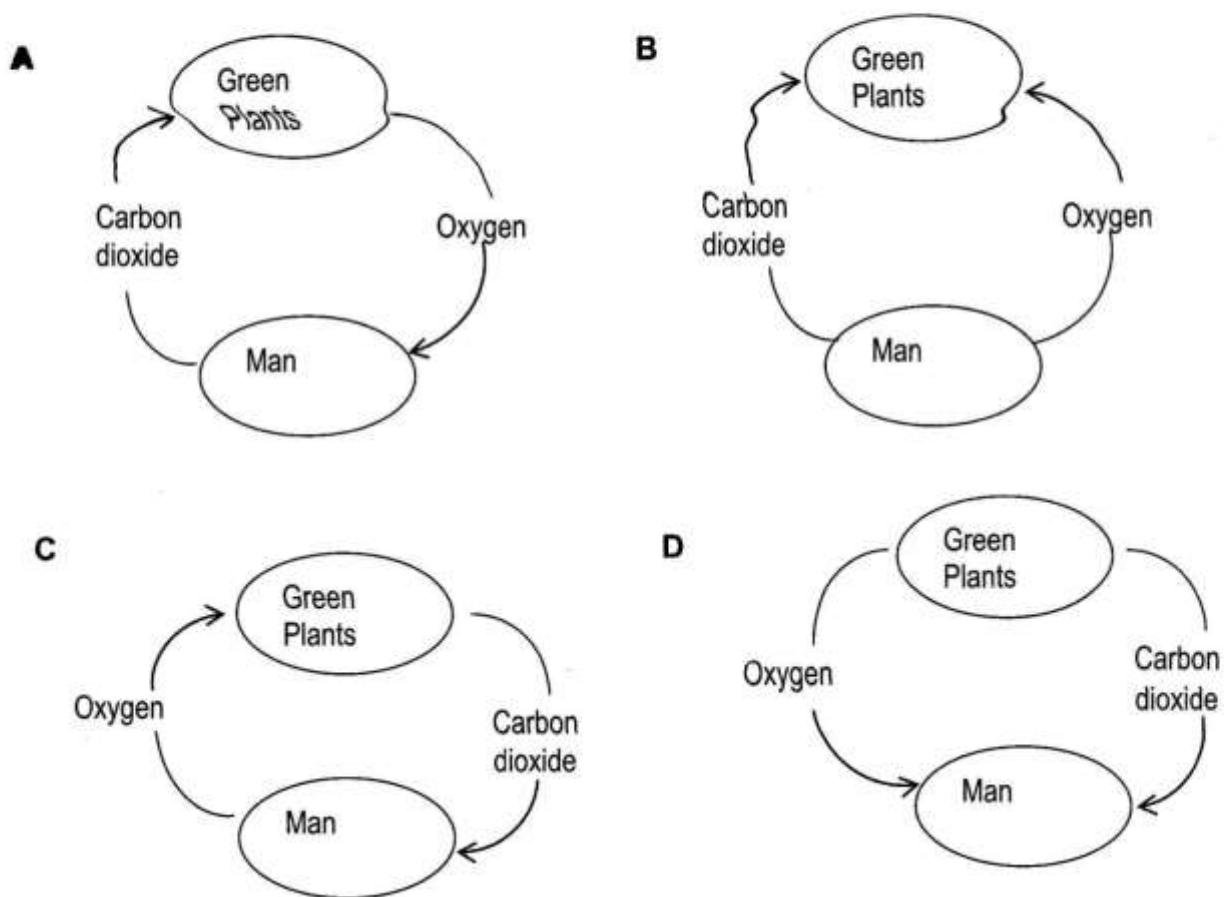
- 3 Mushrooms belong to Kingdom ...

- A Monera.
B Protocista.
C Fungi.
D Plantae.

- 4 What parts of a plant cell are affected when the cell is immersed in concentrated sucrose solution? Cell ...

- A membrane and cell wall.
B membrane and vacuole.
C wall and nucleus.
D wall and cytoplasm.

Which cycle shows the transfer of gases between man and green plants during photosynthesis?



Which of the following shows the function of water in the body of a human being?

✓ – Yes

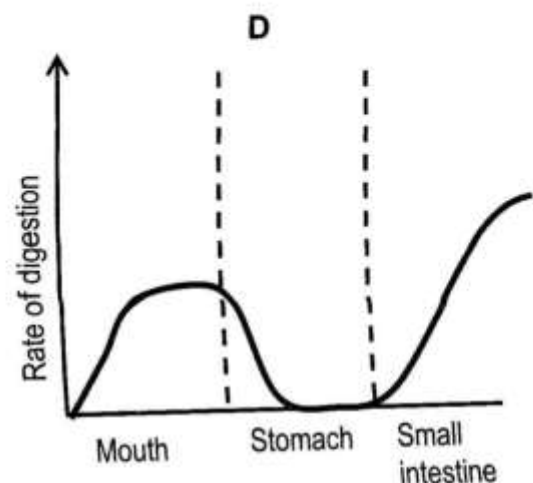
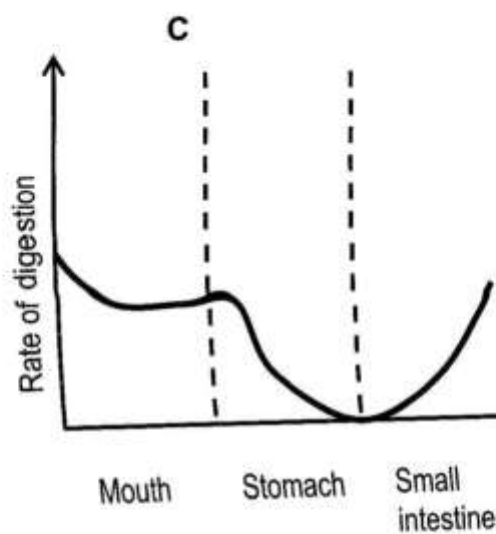
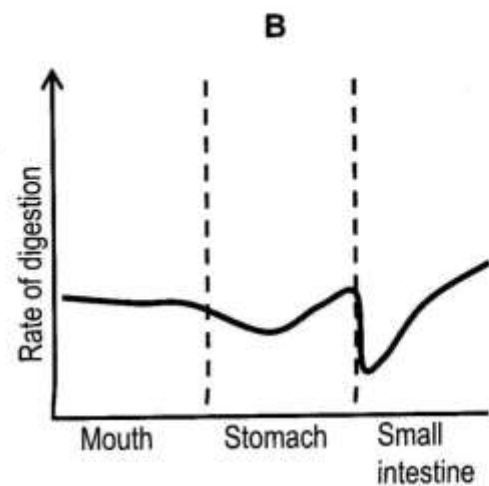
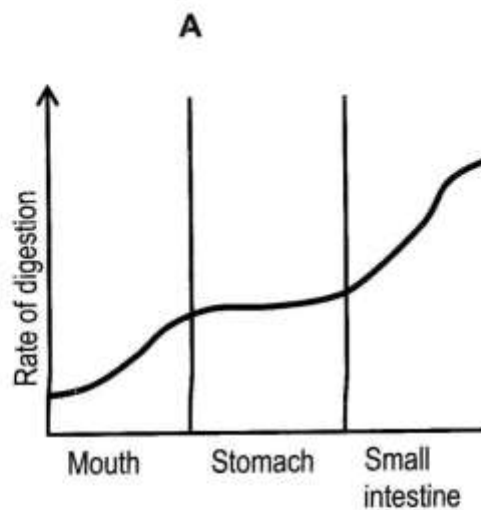
X – No

	Solvent for Vitamin A and D	Helps break down starch to maltose	Carrying Urea in the blood	Component of cytoplasm
A	✓	✓	✓	X
B	✓	✓	X	✓
C	✓	X	✓	✓
D	X	✓	✓	✓

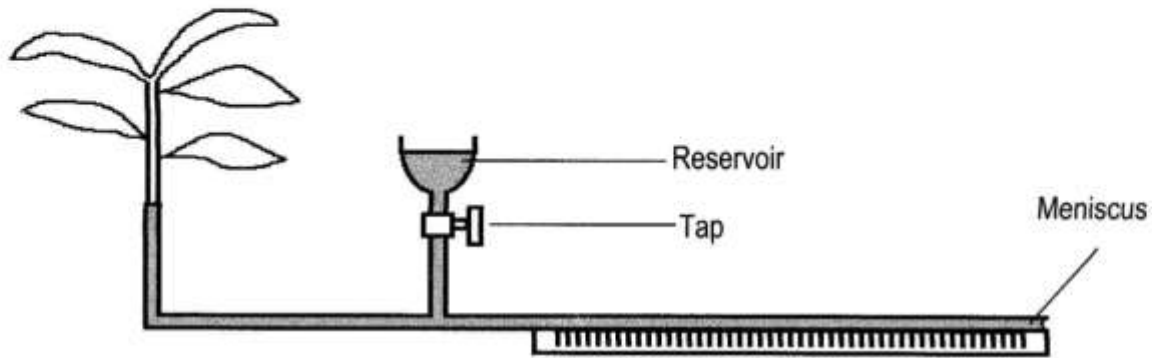
- 7 Three patients are suffering from different diseases. What is the best food to help the recovery of each patient?

	Patient 1 with anaemia	Patient 2 with Rickets	Patient 3 with slow healing wounds
A	eggs	liver	oranges
B	eggs	oranges	liver
C	liver	eggs	oranges
D	oranges	eggs	liver

- 8 Which of the following graphs shows the rate of digestion of starch in the three parts of the alimentary canal?



- 9 The diagram shows a potometer used to investigate water uptake by a cut leafy twig.



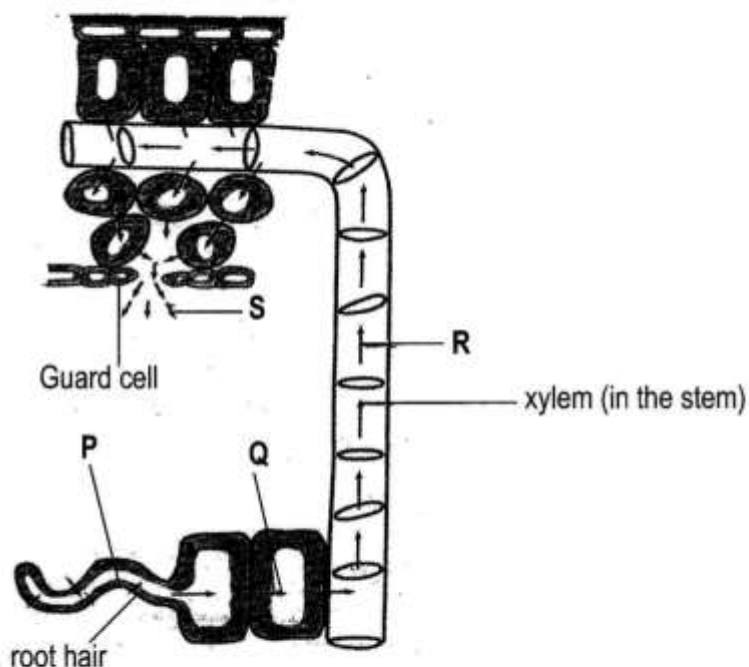
In which of the following set of conditions will the tap need to be used most often?

- A Light, no wind, humid
 B Light, windy, dry
 C Dark, no wind, humid
 D Dark, windy, dry
- 10 By what process do phosphate ions enter root hair cells of a plant?
- A Photosynthesis
 B Diffusion
 C Active transport
 D Osmosis
- 11 Four processes necessary for a bleeding wound to heal are listed:
- 1 the blood clot forms a seal
 - 2 fibres trap red blood cells
 - 3 fibrinogen is converted to fibrin
 - 4 new tissues form

In which order do these processes take place for the bleeding to stop?

	First	→			Last
A	1	2	4		3
B	2	4	3		1
C	3	2	1		4
D	4	3	1		2

- 12 The schematic diagram below shows movement of water in a plant from the roots to the leaves.



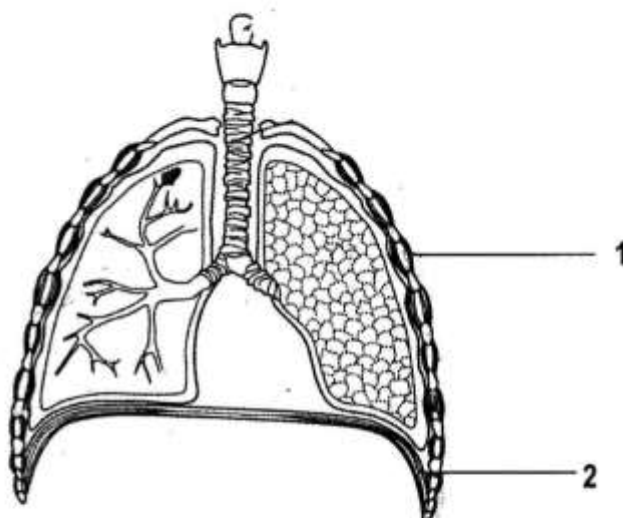
What processes are responsible for the movement of water at points **P**, **Q**, **R** and **S**?

	P	Q	R	S
A	Osmosis	Osmosis	Transpiration pull	Evaporation
B	Osmosis	Transpiration pull	Osmosis	Evaporation
C	Osmosis	Evaporation	Osmosis	Transpiration pull
D	Osmosis	Transpiration pull	Evaporation	Osmosis

- 13 Which of the following correctly compares the artery, vein and capillary?

	ARTERY	VEIN	CAPILLARY
A	Thick-walled, muscular and elastic	Wider lumen and thinner walls	Tiny vessel which is one-cell thick
B	Wider lumen and thinner walls	Tiny vessel which is one-cell thick	Thick-walled muscular and elastic
C	Tiny vessel which is one cell thick	Thick-walled muscular, and elastic	Wider lumen and thinner walls
D	Thick-walled, muscular and elastic	Tiny vessel which is one-cell thick	Wider lumen and thinner walls

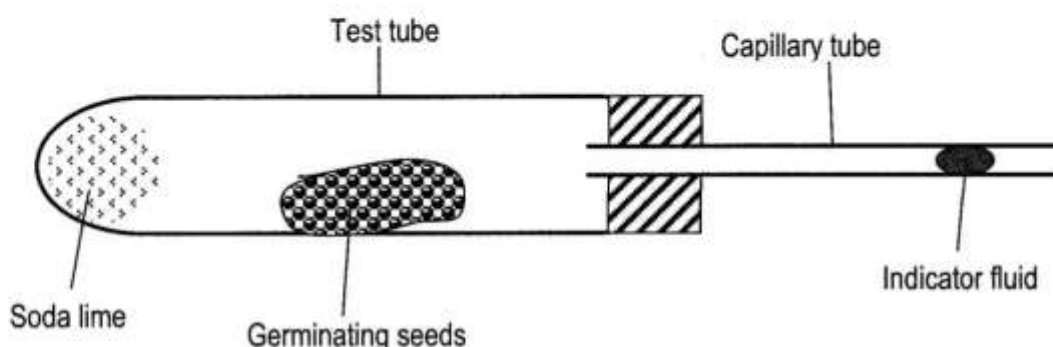
- 14 The diagram shows a section through a human thorax.



What changes occur in order for air to leave the lungs?

	Muscle 1	Muscle 2	Pressure in Thorax
A	Contract	Contract	Reduced
B	Contract	Relax	Reduced
C	Relax	Contract	Increased
D	Relax	Relax	Increased

- 15 The diagram below is an experiment set up to investigate respiration in germinating seeds.



What happens to the indicator fluid in the capillary tube after one hour?

- A** Moves towards the test tube because of carbon dioxide intake by the seed.
B Moves towards the test tube because of oxygen intake by the seed.
C Moves away from the test tube because of oxygen output by the seeds.
D Remains stationary because carbon dioxide intake and oxygen output are equal.

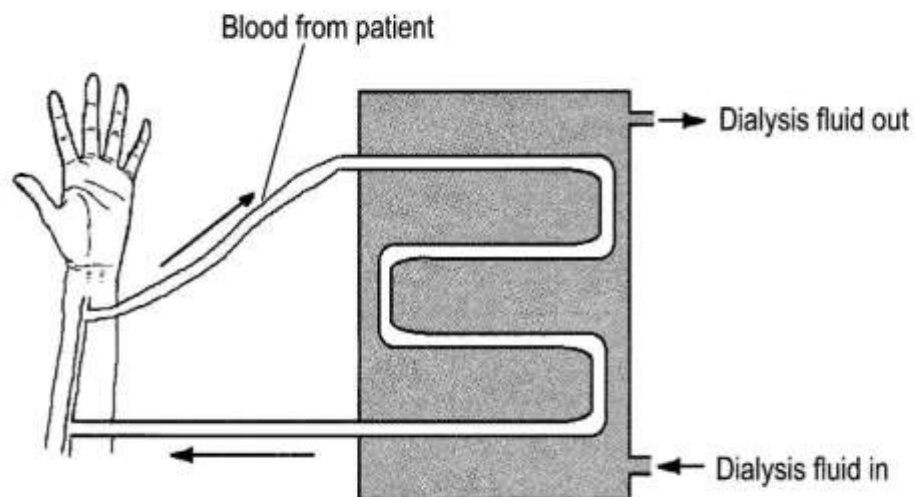
16 What are the products of aerobic respiration and anaerobic respiration in muscle tissue?

	Aerobic respiration	Anaerobic respiration
A	Carbon dioxide and water	Ethanol
B	Carbon dioxide and water	Lactic acid
C	Ethanol	Carbon dioxide and water
D	Lactic acid	Carbon dioxide and water

17 Which of the following excretory wastes in plants are lost through some seeds?

- A Gums
- B Latex
- C Lipids
- D Mucilage

18 The diagram below shows a kidney machine.



What substance must be equal in concentration in the dialysis fluid and in the blood?

- A Glucose
- B Salt
- C Urea
- D Water

- 19 Some of the structures of the excretory system are listed below.

- 1 Bladder
- 2 Ureter
- 3 Urethra

In which order does a molecule of urea pass through these structures?

	First	→	Last
A	1	2	3
B	1	3	2
C	2	1	3
D	3	1	2

- 20 Which changes are likely to occur when a person moves from a very cold place into a hot place?

	Sweating	Shivering	Blood vessels in the skin
A	Decrease	Increase	Dilate
B	Increase	Decrease	Constrict
C	Increase	Increase	Constrict
D	Increase	Decrease	Dilate

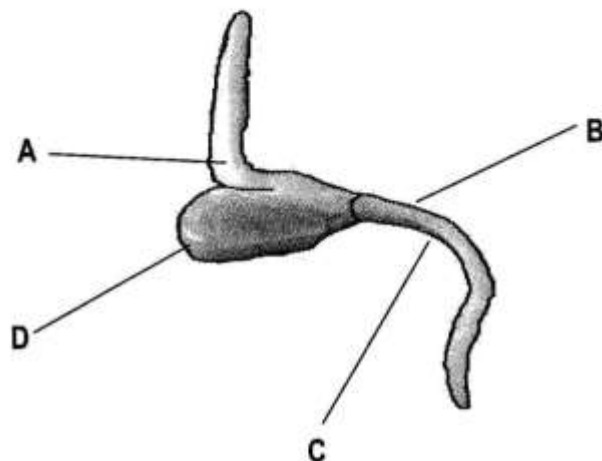
- 21 When there is excess glucose in the blood of a normal human being, how is it returned to normal level?

- A The kidneys filter out more glucose.
- B The kidneys reabsorb more glucose.
- C The liver converts glycogen to glucose.
- D The liver makes glycogen from glucose.

- 22 Which of the following is the correct order of processes that take place during growth? Cell ...

- A division, elongation, specialization.
- B division, specialization, elongation.
- C elongation, division, specialization.
- D elongation, specification, division.

23 The figure below shows a seedling developing from a maize seed.



Which part has high auxin concentration and retarded growth?

- 24 In a reflex action, the following events take place.
- 1 activation of muscle
 - 2 activation of receptor
 - 3 passage of impulses along a motor neurone
 - 4 passage of impulses along a sensory neurone

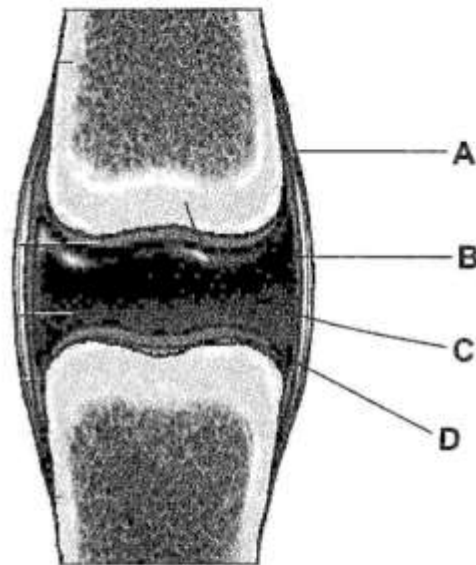
What is the correct order of these events?

	First				Last
A	2	1	3	4	
B	2	4	3	1	
C	4	1	3	2	
D	4	3	2	1	

25 What type of skeleton is found in man, grasshopper and earthworm?

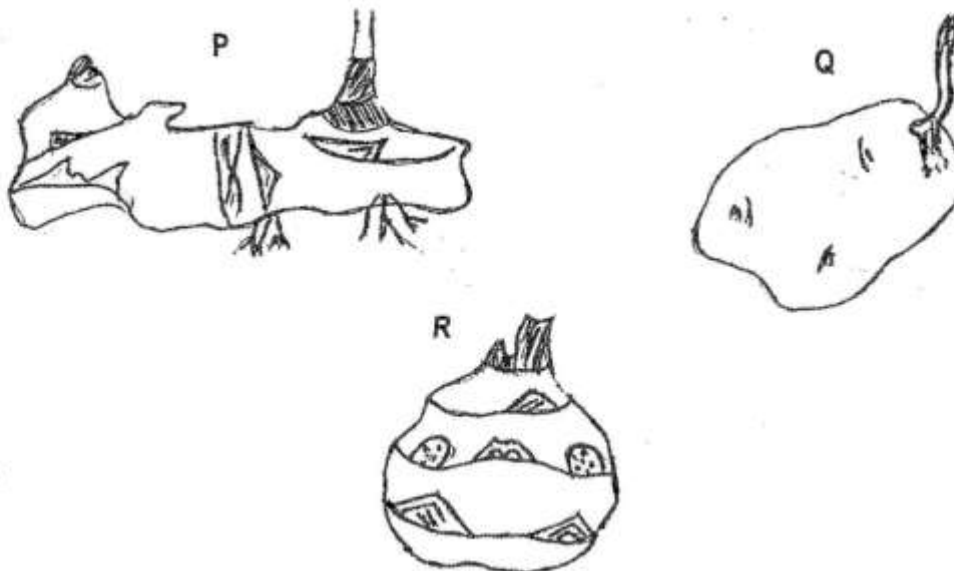
	Man	Grasshopper	Earthworm
A	Endoskeleton	Exoskeleton	Hydrostatic skeleton
B	Endoskeleton	Hydrostatic skeleton	Exoskeleton
C	Hydrostatic skeleton	Endoskeleton	Exoskeleton
D	Hydrostatic skeleton	Exoskeleton	Endoskeleton

- 26 The diagram shows a section through a joint.



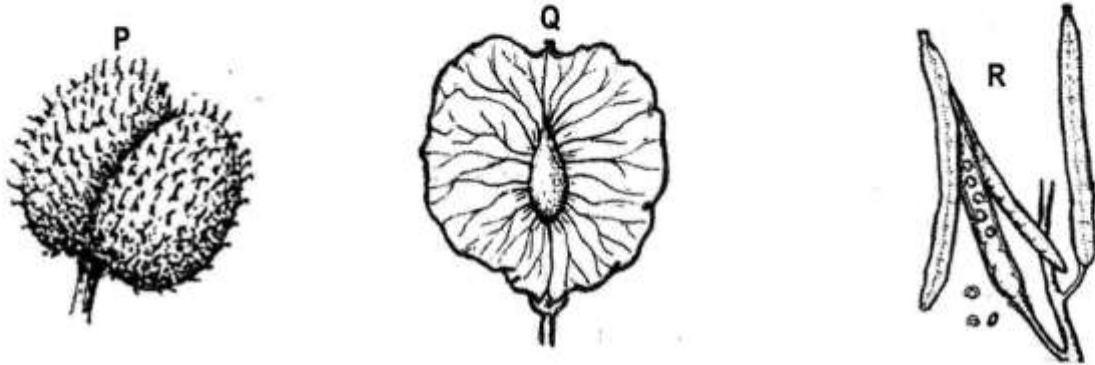
Which part of the joint needs both Vitamin D and amino acids for its growth and development?

- 27 What are the names of the following underground stems from which new plants may arise?



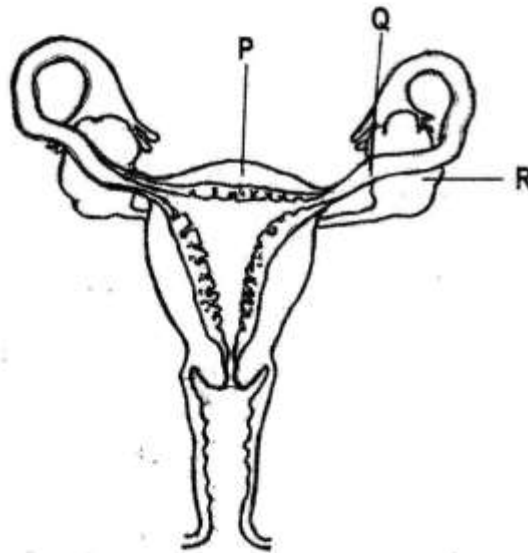
	P	Q	R
A	Rhizome	Tuber	Corn
B	Rhizome	Corn	Tuber
C	Tuber	Rhizome	Corn
D	Tuber	Corn	Rhizome

28 How are the seeds of the following fruits dispersed?



	P	Q	R
A	Animal	Self	Wind
B	Animal	Wind	Self
C	Self	Animal	Wind
D	Self	Wind	Animal

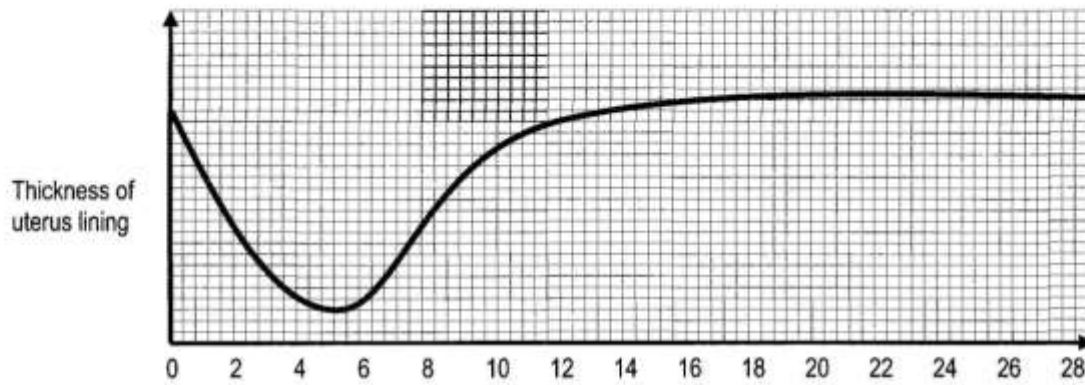
29 The diagram represents part of the reproductive system of a female mammal.



Where do fertilization, implantation and ovulation occur?

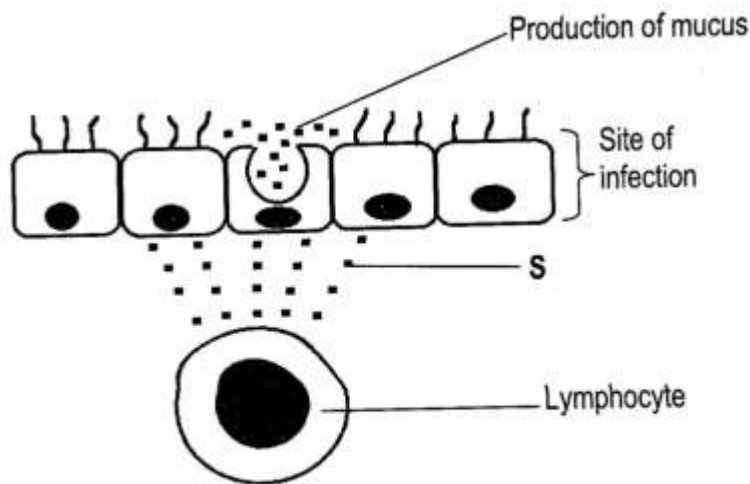
	Fertilization	Implantation	Ovulation
A	P	Q	R
B	P	R	Q
C	Q	P	R
D	Q	R	P

- 30 The graph below shows the thickness of the lining of the uterus of a woman over a 28 – day cycle.



How long did the menstruation last?

- A 2 days
 - B 4 days
 - C 5 days
 - D 6 days
- 31 The diagram below shows the response to a pathogen attack on the respiratory tract.



Which of the following correctly shows the identity of substance S and function of mucus produced?

- | | Substance S | Function of mucus |
|---|--------------------|--------------------------|
| A | Antibody | to destroy pathogens |
| B | Antibody | to engulf pathogens |
| C | Antigen | to destroy pathogens |
| D | Antigen | to engulf pathogens |

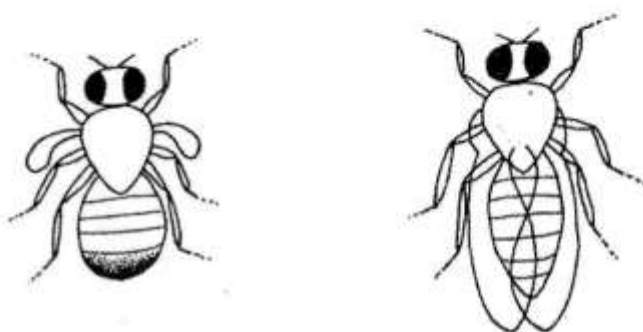
- 32 Which of the following correctly shows examples of nutritional, inherited and pathogenic diseases?

	Nutritional	Inherited	Pathogenic
A	Marasmus	Sickle cell	Tuberculosis
B	Marasmus	Tuberculosis	Sickle cell
C	Sickle cell	Tuberculosis	Marasmus
D	Sickle cell	Marasmus	Tuberculosis

- 33 The administering of ready-made antibodies to patients is an example of ... immunity.

- A active
- B artificial
- C natural
- D passive

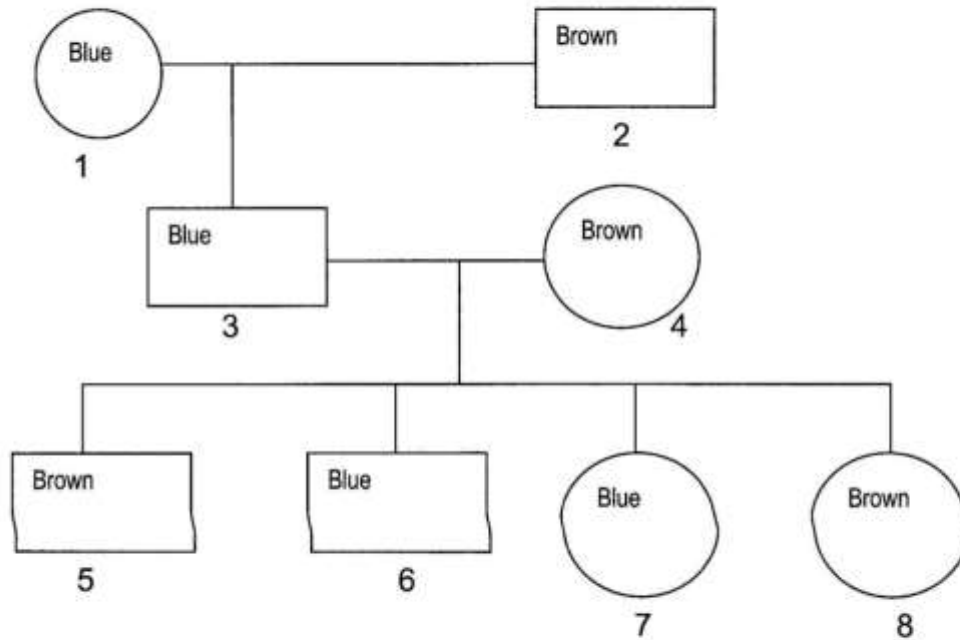
- 34 The diagram shows two *Drosophila* flies and their parts.



Which two characteristics are different in the two flies?

- A Number of abdominal segments and number of antenna.
- B Number of abdominal segments and position of thorax.
- C Shape of abdomen and number of legs.
- D Shape of abdomen and size of wings.

- 35 The diagram below shows part of a family tree in which some have brown eyes and others blue eyes.

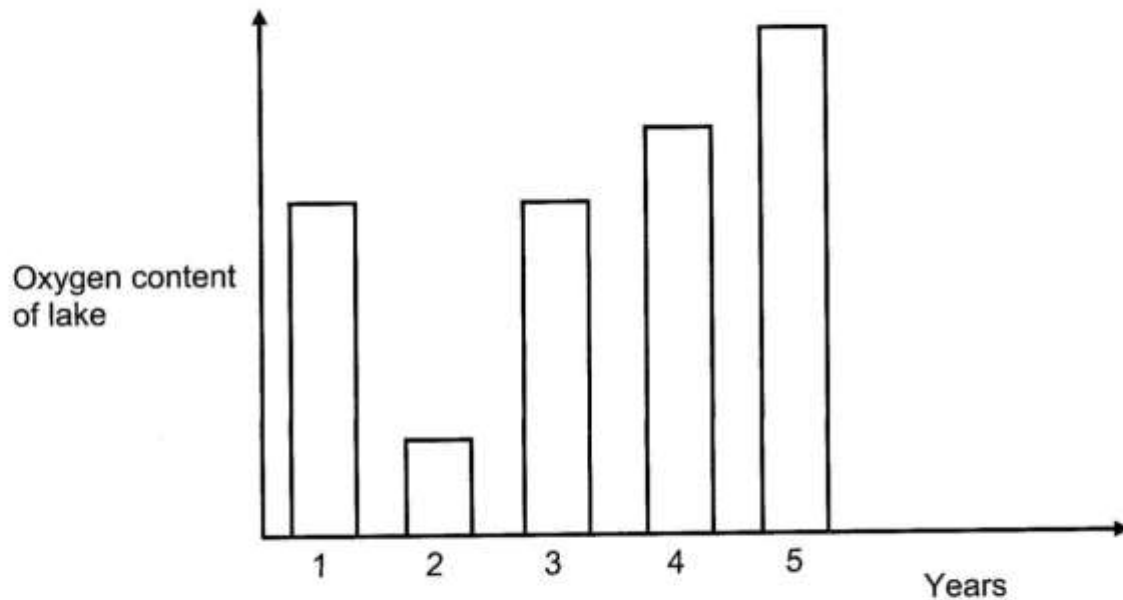
**KEY**

- Male
○ Female

Which members of the family had heterozygous genotype for eye colour?

- A 1 only
 B 1 and 2
 C 3, 6 and 7
 D 2, 4, 5 and 8
- 36 In rabbits, the allele for brown coat (B) is dominant to the allele for white coat (b). What is the chance/ probability that the offspring will be white when a homozygous brown rabbit is mated with a white rabbit?
- A 0%
 B 25%
 C 75%
 D 100%

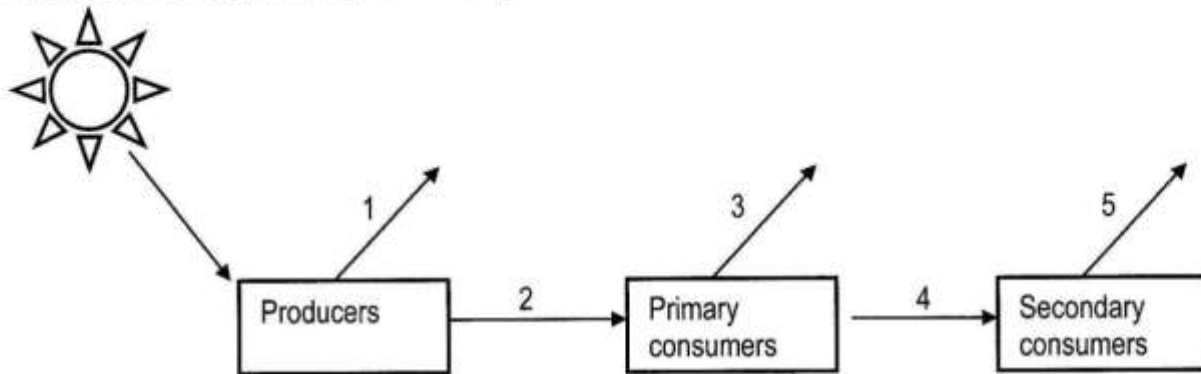
- 37 The diagram shows the average oxygen content of a lake during a period of 5 years.



What occurred in year 2?

- A Raw sewage was discharged into the lake.
 - B Some weeds grew on the surface of the lake.
 - C The lake was stocked with fish.
 - D The use of herbicide on land around the lake was stopped.
- 38 Which of the following human activities destroys biodiversity?
- A Cutting down of trees for settlements and farming.
 - B Creation of forest reserves and game reserves.
 - C Fishing and hunting bans during the breeding seasons of animals.
 - D Recycling of products made from natural resources.

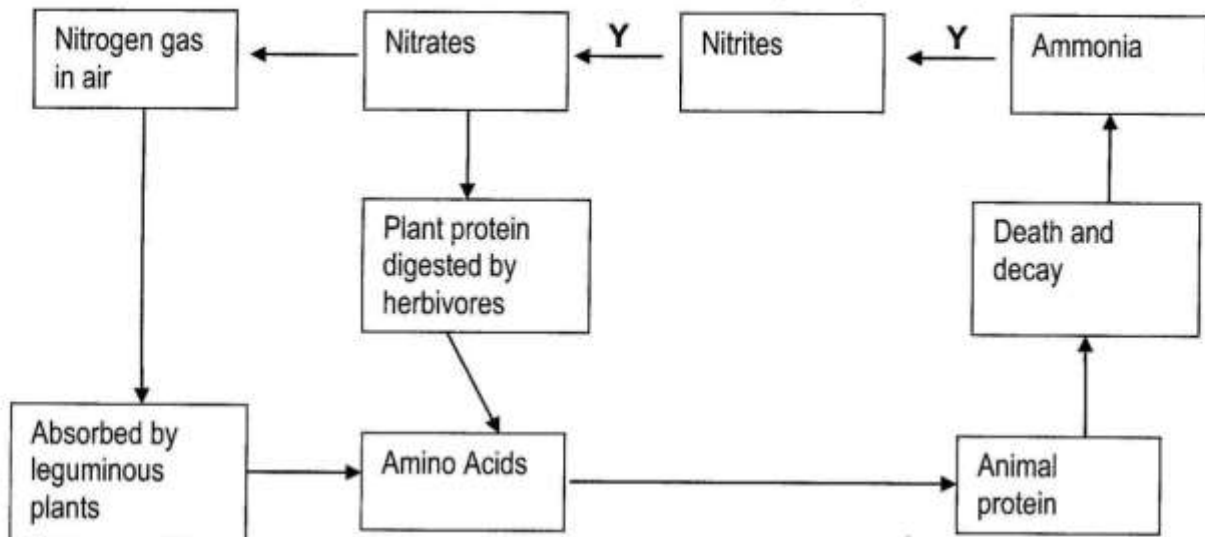
- 39 The flow of energy through an ecosystem is shown.



Which arrows represent the least amount of energy transferred between organisms and the greatest amount of energy lost to the environment?

	Least energy transferred	Greatest energy lost
A	1	4
B	1	5
C	4	1
D	4	2

- 40 The diagram below shows some stages in the nitrogen cycle.



What is process Y?

- A Denitrification
- B Nitrification
- C Nitrogen fixation
- D Respiration

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