



EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology

Paper 1 Multiple Choice

5090/1

Thursday

11 NOVEMBER 2021

Additional Materials:

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

Time: 50 minutes

Marks: 40

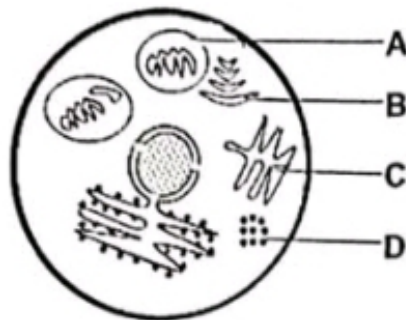
Instructions to Candidates

- 1 Ensure that the **school/centre name** and **subject paper, subject code, paper number, centre code, your examination number** and the **year** are correctly printed and shaded on the Answer Sheet.
- 2 There are **forty** questions in this paper. Answer all questions.
- 3 For each question there are four possible answers: **A, B, C and D**. Choose the **one** you consider correct and shade your choice in **soft pencil** on the separate Answer Sheet.
- 4 **Read very carefully the instructions on the Answer Sheet.**

Information for Candidates

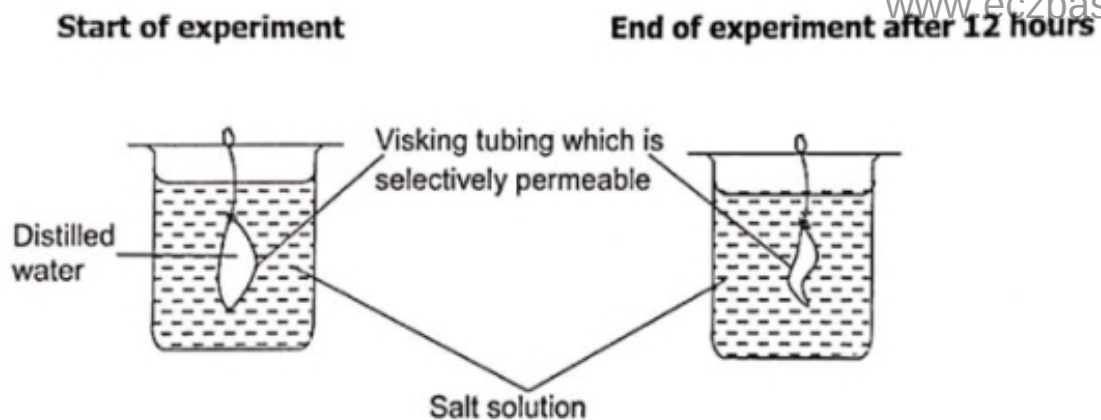
- 1 Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
- 2 Any rough working should be done in this Question Paper.
- 3 Cell phones are **not allowed** in the examination room.

- 1 Which of the following are characteristics of **all** living things?
- A Egestion and excretion
 - B Egestion and nutrition
 - C Excretion and nutrition
 - D Nutrition and photosynthesis
- 2 The following diagram shows a detailed structure of an animal cell.



Which of the labelled parts modifies and transports proteins from the site of synthesis to the site of reaction?

- 3 The diagram shows an experiment conducted by a learner.



What is the correct explanation to what happened to the visking tubing after 12 hours?
The visking tubing ...

- A became smaller because it is porous.
- B lost water due to evaporation.
- C shrank because salt solution moved into it.
- D shrank because water molecules moved out of it.

- 4 The table shows the conditions in four test tubes containing equal amounts of starch and salivary amylase.

In which test tube would the starch be broken down fastest?

	pH	Temperature °C
A	2	27
B	2	37
C	7	27
D	7	37

- 5 Four food samples were tested for each of the following nutrients;

- Fat (using ethanol)
- Protein (using biuret reagent)
- Reducing sugar (using Benedict's solution)

Which food sample contained proteins and reducing sugars?

	Colour of results of food tests		
	Purple	Brick red	White emulsion
A	✓	X	✓
B	✓	✓	X
C	X	X	✓
D	X	✓	X

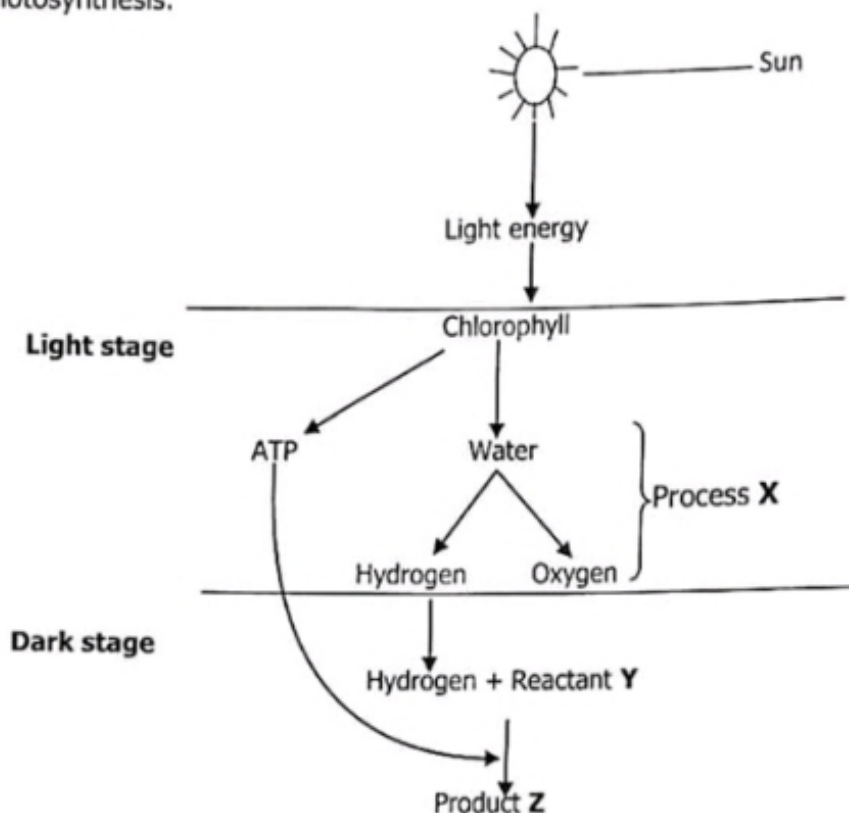
Key

✓ = nutrient present

X = nutrient absent

- 6 A child is fed on beef, oily fish, cheese and water only. Which nutrient would be in low levels in this diet?
- A** Calcium
- B** Iron
- C** Vitamin C
- D** Vitamin D
- 7 Which of the following plant nutrients is essential for germination of pollen grains and growth of pollen tubes?
- A** Boron
- B** Calcium
- C** Iron
- D** Zinc

- 8 The following figure shows a diagrammatic summary of the main events in photosynthesis.

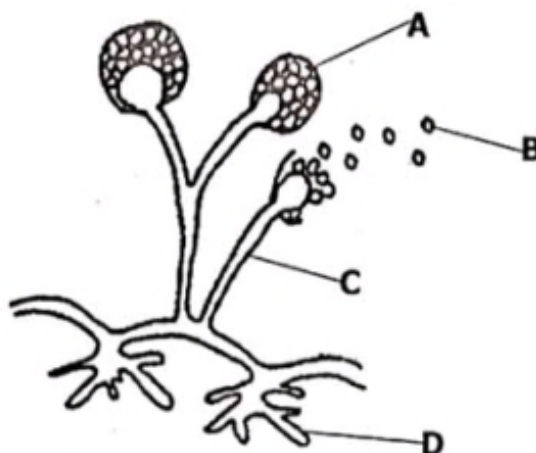


Name the process X, reactant Y and product Z?

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	Process X	Reactant Y	Product Z
A	Condensation	Glucose	ADP
B	Condensation	Water	Glucose
C	Photolysis	Carbon dioxide	Glucose
D	Photolysis	Carbon dioxide	Starch

- 9 The diagram shows the structure of Bread Mould (Rhizopus).



Which part releases digestive enzymes?

10 Which of the following is a dental formula of a dog?

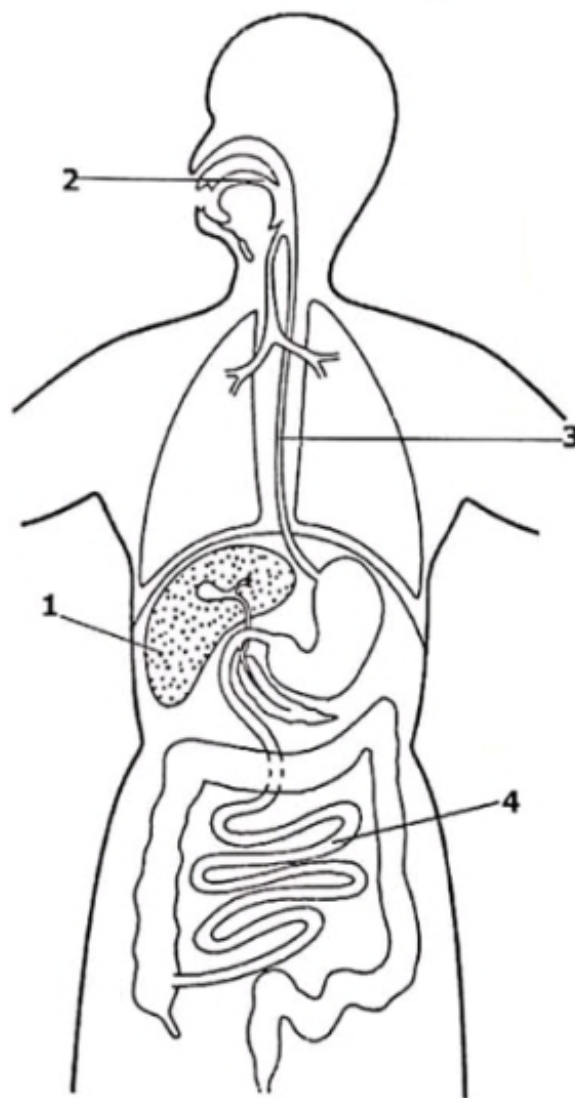
A $i = \frac{0}{3}, c = \frac{0}{1}, pm = \frac{3}{3}, m = \frac{3}{3}$

B $i = \frac{1}{1}, c = \frac{0}{0}, pm = \frac{0}{0}, m = \frac{3}{3}$

C $i = \frac{2}{2}, c = \frac{1}{1}, pm = \frac{2}{2}, m = \frac{3}{3}$

D $i = \frac{3}{3}, c = \frac{1}{1}, pm = \frac{4}{4}, m = \frac{2}{3}$

11 The diagram shows the human alimentary canal.



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In which of the labelled parts does peristalsis take place?

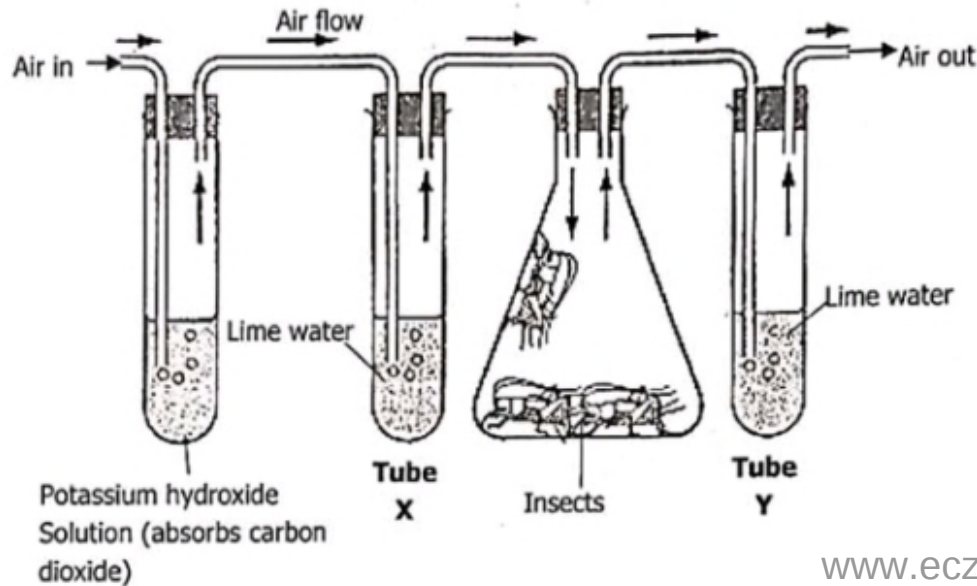
A 1 and 2

B 2 and 3

C 3 and 4

D 4 and 2

- 12 Which of the following chemicals from cigarette smoke reduces the amount of oxygen carried in the blood?
- A Carbon monoxide
 - B Nicotine
 - C Sulphur dioxide
 - D Tar
- 13 The diagram shows apparatus set up to investigate the production of carbon dioxide during respiration in insects.



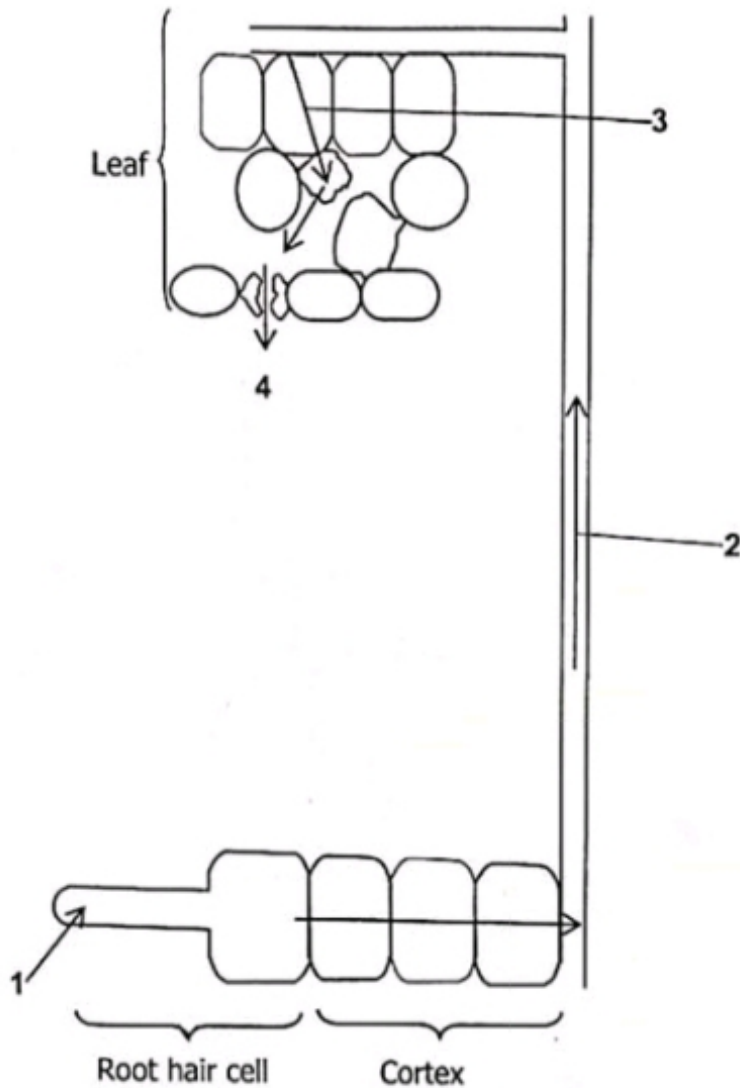
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What changes would occur to the lime water in tubes X and Y five minutes after setting up the apparatus?

	Tube X	Tube Y
A	Cloudy	Cloudy
B	Cloudy	No change
C	No change	Cloudy
D	No change	No change

- 14 Which of the following is **not** a safe sexual practice against HIV and AIDS?
- A Abstinence
 - B Consistence and correct use of condoms
 - C Use of contraceptive pills
 - D Voluntary Counselling and Testing Services

- 15 The diagram shows a sketch of the uptake of water by a plant.



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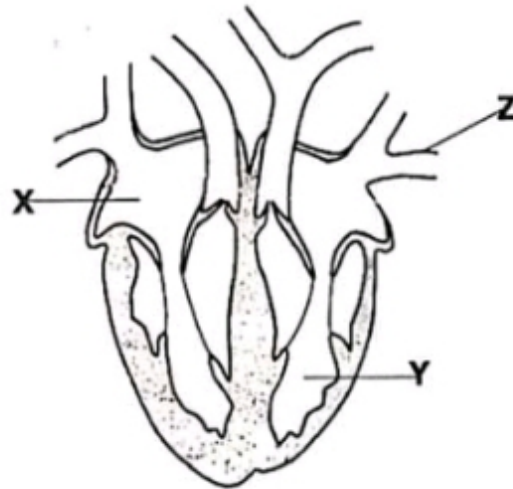
What processes are represented by the arrows numbered **1, 2, 3** and **4**?

	1	2	3	4
A	Diffusion	Osmosis	Transpiration pull	Diffusion
B	Diffusion	Transpiration pull	Osmosis	Diffusion
C	Osmosis	Transpiration pull	Diffusion	Osmosis
D	Osmosis	Transpiration pull	Osmosis	Diffusion

- 16 Which of the following donors would safely donate blood to a patient with blood group O?
A person with blood group ...

- A** A.
B B.
C AB.
D O.

- 17 The diagram shows a longitudinal section through a human heart.

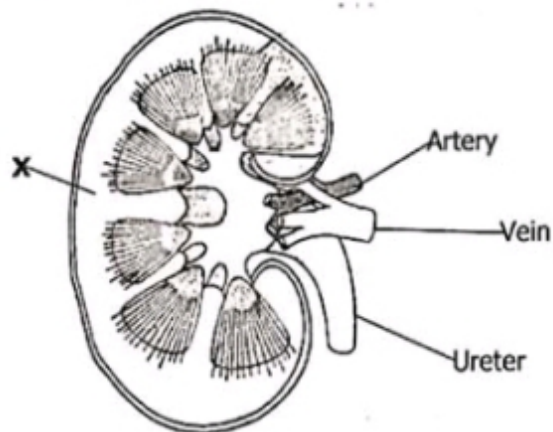


What are the chambers **X** and **Y** and blood vessel **Z**?

	Chamber X	Chamber Y	Blood Vessel Z
A	Left atrium	Right ventricle	Aorta
B	Left ventricle	Right atrium	Aorta
C	Right atrium	Left ventricle	Pulmonary vein
D	Right ventricle	Left atrium	Pulmonary artery

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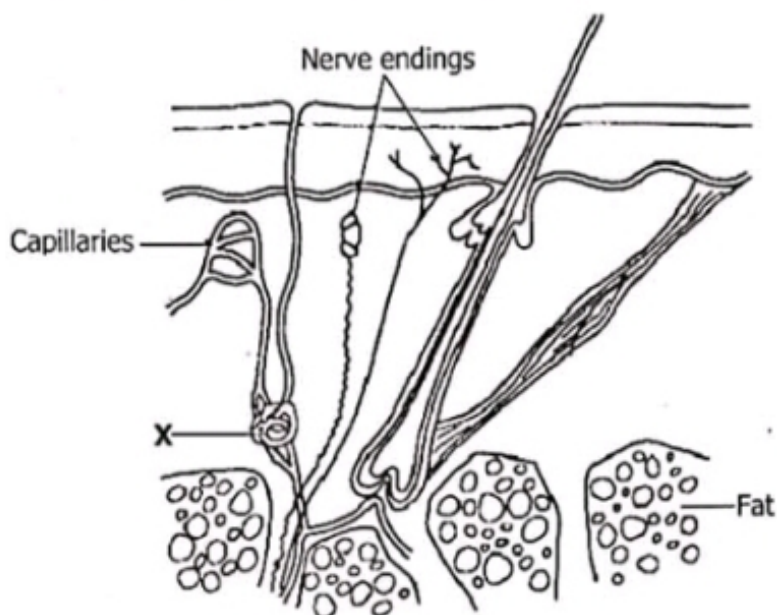
- 18 The diagram shows a kidney and its blood vessels.



What is the name of the part labelled **X**?

- A Cortex
- B Medulla
- C Pelvis
- D Ureter

- 19 The diagram shows a human skin.



What is the name of the structure labelled **X**?

- A Adipose tissue
- B Dermis
- C Epidermis
- D Sweat gland

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- 20 Compared to a hormone, a nerve impulse generally has ...

	A long lasting response	A wide spread response	A fast response
A	Yes	No	Yes
B	No	No	Yes
C	Yes	Yes	No
D	No	Yes	No

- 21 A girl accidentally touches a very hot object and immediately pulls her hand away. In this reflex action, what is the effector?

- A A heat receptor in her hand
- B A motor neurone
- C A muscle in her arm
- D The spinal cord

- 22 The diagram shows a human ear.



What is the function of the part labelled X?

- A Amplify sound.
 - B Collect sound waves and pass them to the external auditory canal.
 - C Contains hairs that trap particles entering the ear.
 - D Equalise pressure between the middle ear and the atmosphere.
- 23 Which of the following actions straighten the arm at the elbow joint?

	Biceps	Triceps
A	Contracts	Contracts
B	Contracts	Relaxes
C	Relaxes	Contracts
D	Relaxes	Relaxes

- 24 Which of the following indicates primary growth in plants?

- A Differentiation of cells in the cortex.
- B Formation of secondary xylem and phloem.
- C Increase in the length of the stem.
- D Increase in the size of the girth.

- 25 Which of the following is **not** a condition necessary for seed germination?

- A Oxygen
- B Soil
- C Suitable temperature
- D Water

- 26 A bean seed was germinated and grown in the dark for a few days. It was then placed as shown in diagram P. Diagram P shows the appearance of the seedling at the beginning of the experiment while Q shows its appearance after two days.



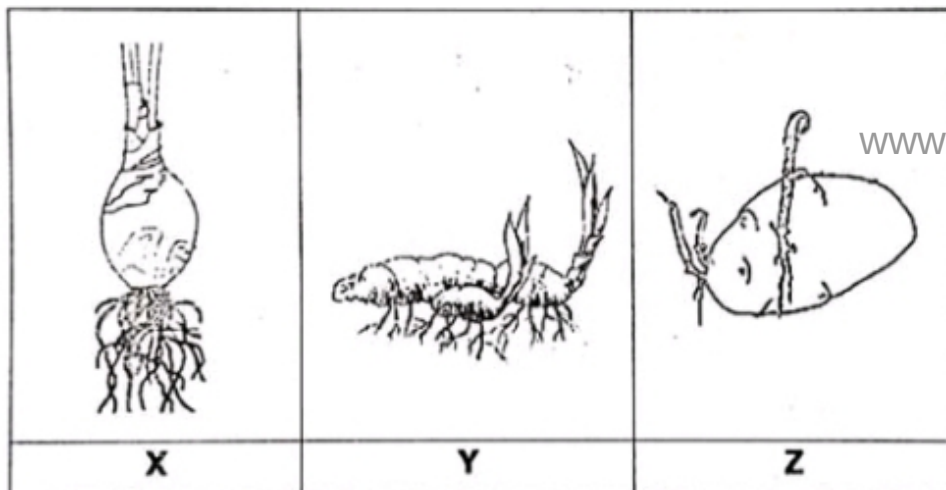
What response is exhibited by the root and shoot in diagram Q?

	Roots	Shoots
A	Negative geotropism	Negative geotropism
B	Negative phototropism	Positive phototropism
C	Positive geotropism	Negative geotropism
D	Positive phototropism	Negative phototropism

- 27** Which of the following methods of asexual reproduction are unique to amoeba, yeast and fungi?

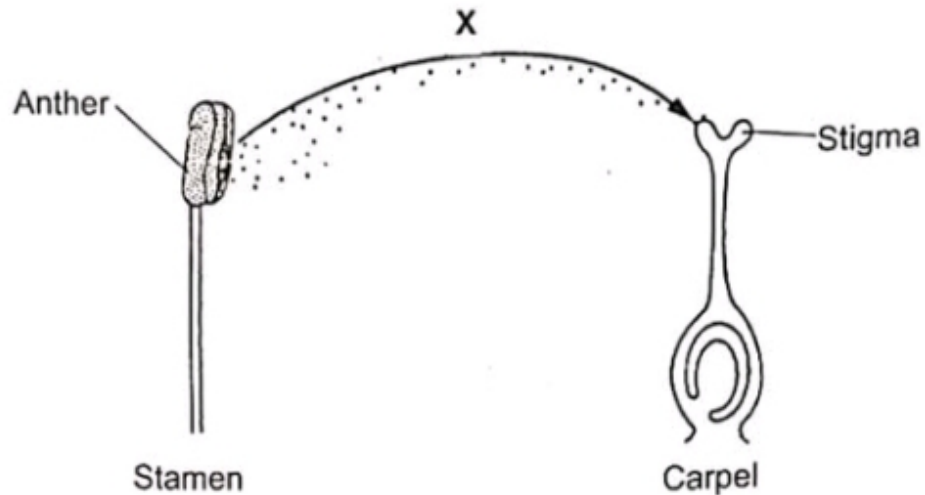
	Amoeba	Yeast	Fungi
A	Binary fission	Budding	Spore formation
B	Binary fission	Spore formation	Budding
C	Budding	Binary fission	Spore formation
D	Spore formation	Budding	Budding

- 28** Name the following vegetative structures labelled X, Y and Z.



	X	Y	Z
A	Bulb	Rhizome	Corm
B	Bulb	Rhizome	Tuber
C	Corm	Sucker	Rhizome
D	Tuber	Runner	Rhizome

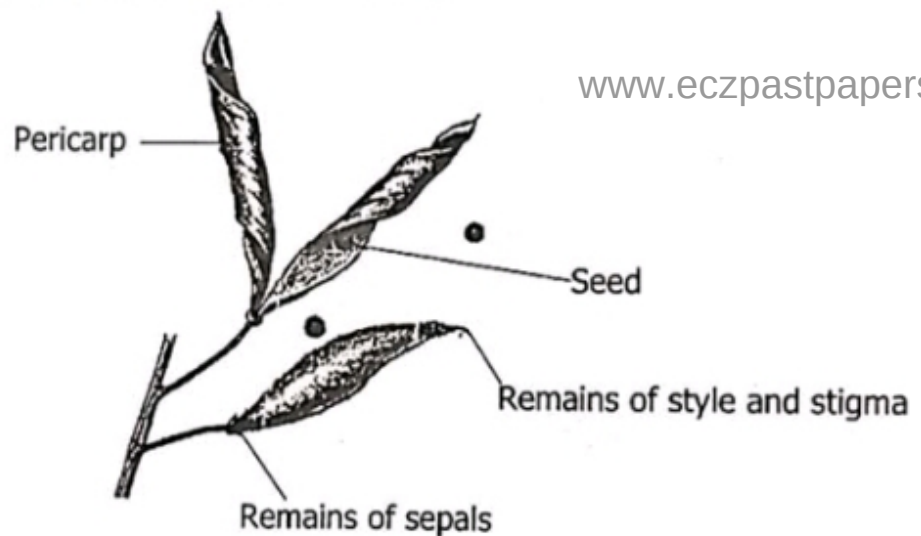
29 The diagram shows a process in plant reproduction.



What process is represented by letter X?

- A Fertilisation
- B Fruit dispersal
- C Pollination
- D Seed dispersal

30 What mode of dispersal is illustrated in the diagram?

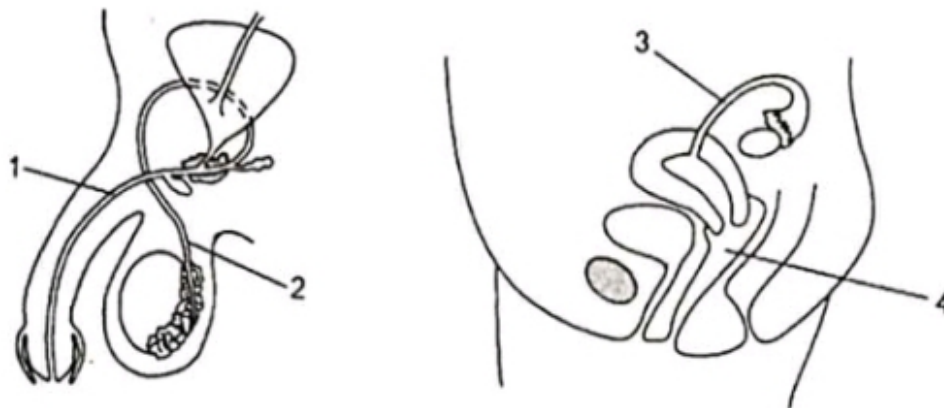


- A Animal
- B Self
- C Water
- D Wind

31 Which route does an unfertilised ovum follow through the female reproductive system after it has been released from the ovary?

- A Oviduct → Uterus → Vagina
- B Oviduct → Vagina → Uterus
- C Uterus → Oviduct → Vagina
- D Uterus → Vagina → Oviduct

- 32 The diagrams show the side view of the male and female reproductive systems.



Which **two** parts are cut and tied during the procedures called tubal ligation and vasectomy?

- A 1 and 3
B 1 and 4
C 2 and 3
D 2 and 4
- 33 Which of the following correctly identifies the examples of continuous and discontinuous variation?

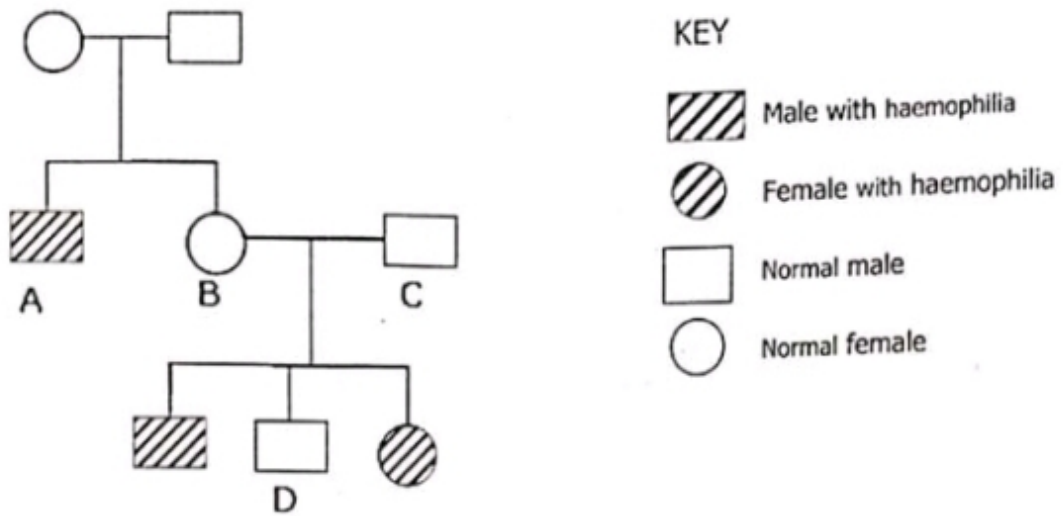
	Continuous variation	Discontinuous variation
A	Blood groups in humans	Ability to roll the tongue in humans
B	Colour of flowers in peas	Intelligence in humans
C	Height in humans	Colour of eyes in humans
D	Sex in humans	Skin colour in humans

- 34 What stage of mitosis is illustrated in the diagram?



- A Anaphase
B Metaphase
C Prophase
D Telophase

- 35 The diagram shows a pedigree in which some members of the family have haemophilia.



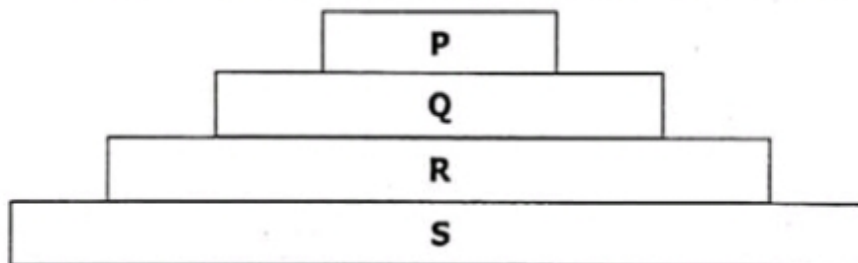
Which person is a carrier for haemophilia?

- 36 Which of the following types of soil has the highest distribution of earth worms?

- A Clay soil
- B Loam soil
- C Sand soil
- D Silt soil

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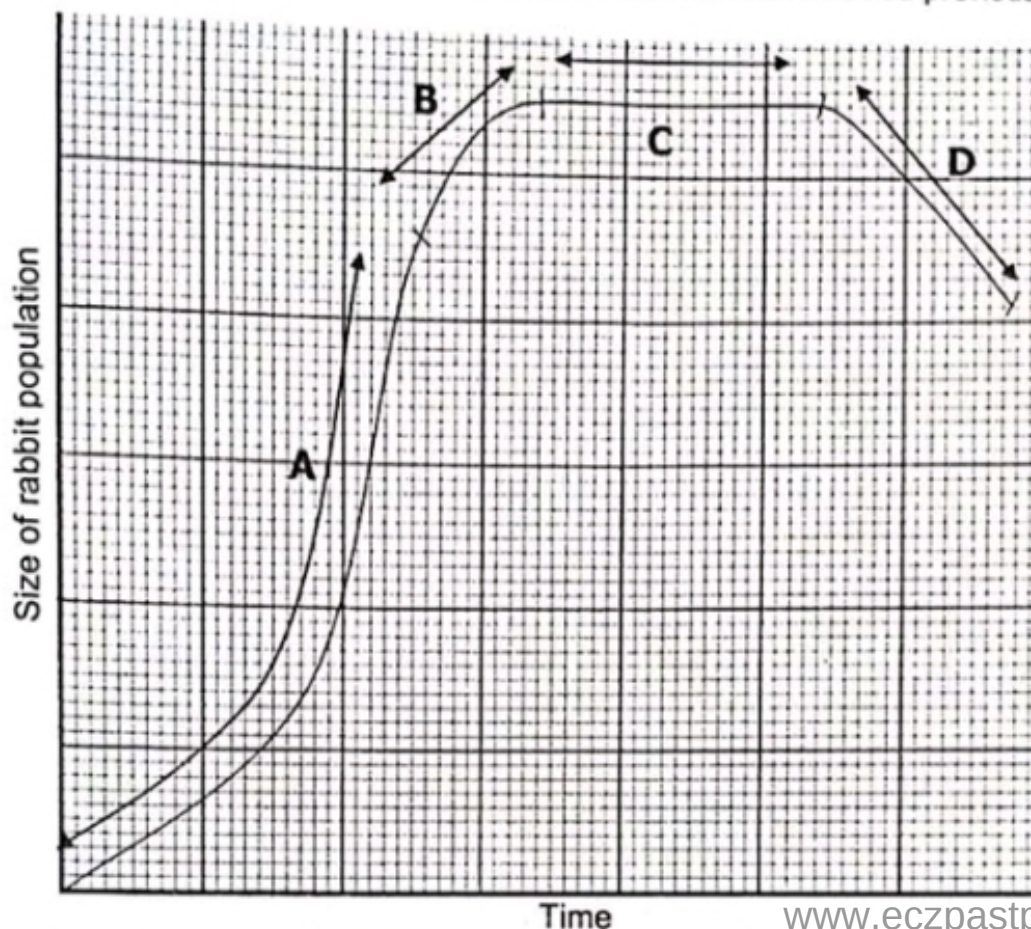
- 37 The diagram shows a pyramid of biomass for organisms in an ecosystem.



Which organisms are carnivores?

- A P and Q
- B P and R
- C Q and R
- D R and S

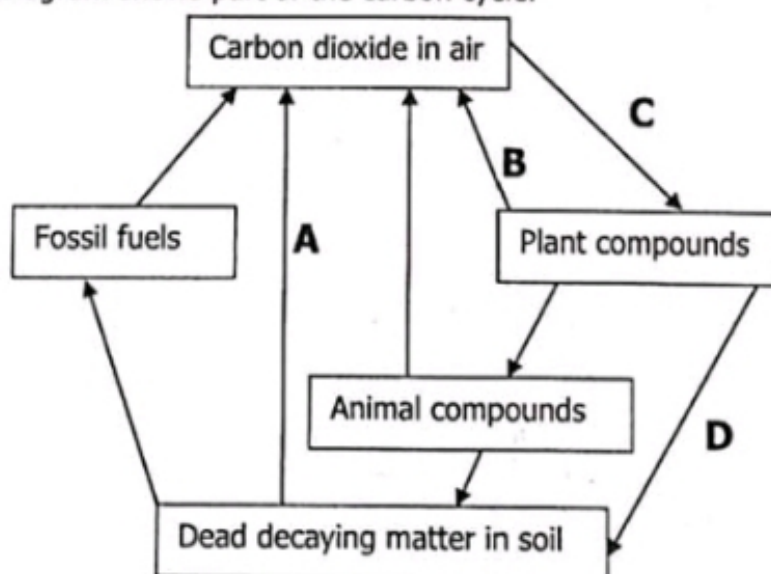
- 38 Rabbits are primary consumers. The following figure shows changes in the population of rabbits after a small number was released on an island where none had previously lived.



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Which stage shows when the birth rate was equal to the death rate?

- 39 The diagram shows part of the carbon cycle.



Which letter represents photosynthesis?

- 40 Which effect is least likely to occur as a result of deforestation?
- A A decrease in biodiversity.
 - B An increase in soil erosion.
 - C An increase in the level of carbon dioxide in the atmosphere.
 - D An increased risk of flooding.