

4551/1
Biology
Paper 1
May
2007
1 $\frac{1}{4}$ hours



**SEKTOR SEKOLAH BERASRAMA PENUH
BAHAGIAN SEKOLAH
KEMENTERIAN PELAJARAN MALAYSIA**

**SIJIL PELAJARAN MALAYSIA (FORM 5)
MID YEAR EXAM
2007**

BIOLOGY

PAPER 1

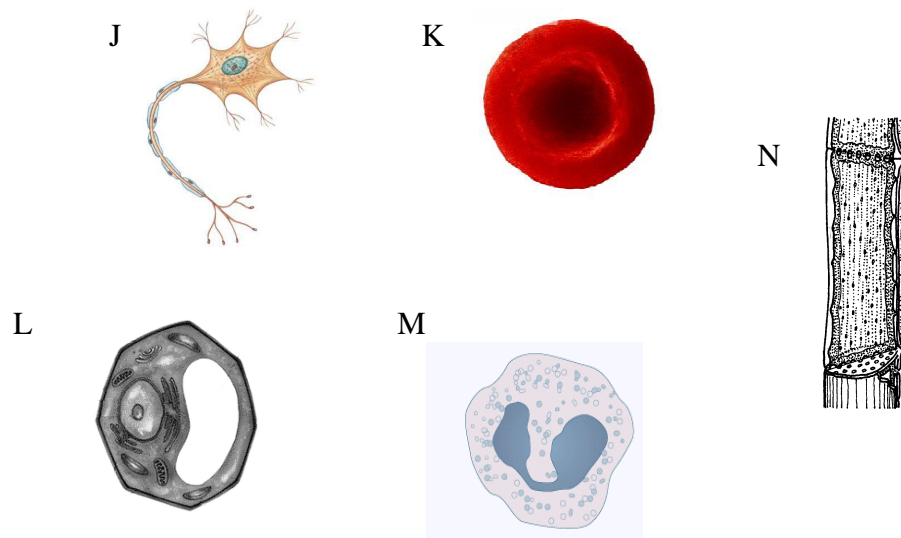
One hour fifteen minutes

DO NOT OPEN THE TEST PAPER UNTIL YOU ARE TOLD TO DO SO

INFORMATION FOR CANDIDATES

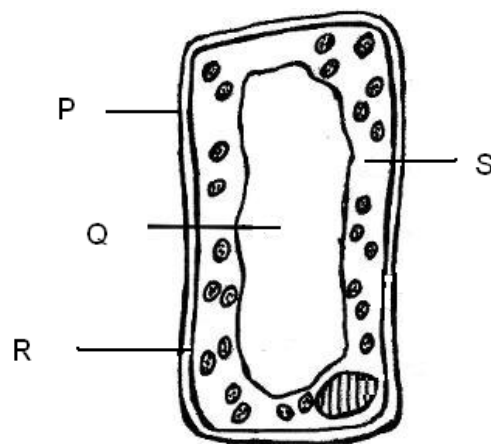
1. *These question paper consists of **50** questions.*
2. *Answer **all** questions*
3. *Answer each question by blackening the correct space on the answer sheet.*
4. *Blacken **only one** space for each question.*
5. *If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer.*
6. *The diagrams in the questions provided are not drawn to scale unless stated.*
7. *You may use a non-programmable scientific calculator.*

1 The diagram shows five different cells observed under a microscope



Which of the cells are animal cells?

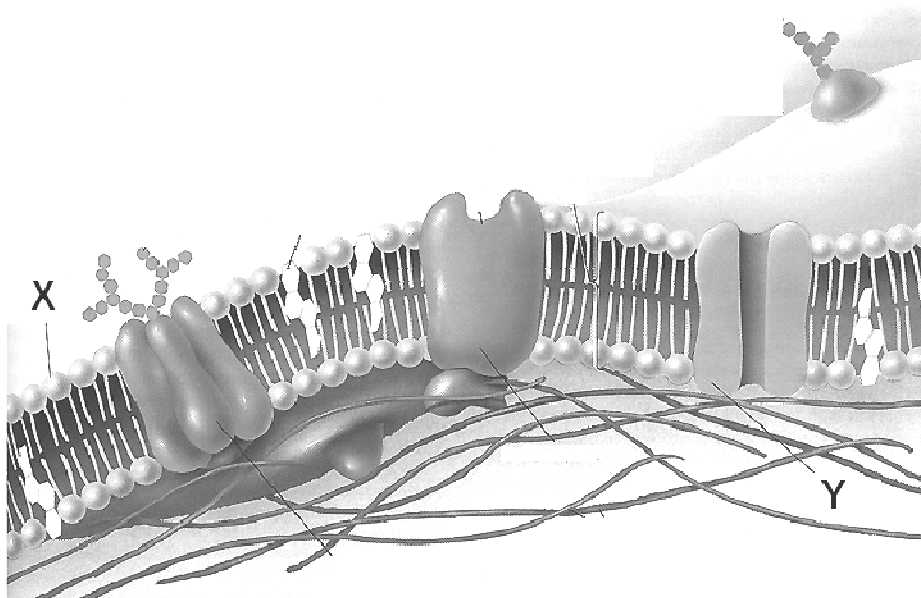
- A K, L and M
- B J, K and N
- C J, K and M
- D L, M and N



2 Which of the structures P, Q, R and S in the figure above are found **only** in plants cells?

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

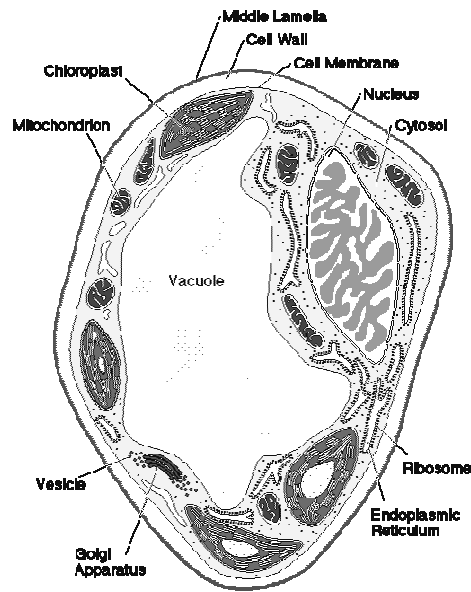
- 3 Which of the following describe the internal environment of a living organism?
- A Fluid in a body cell
 - B Fluid in an organelle
 - C Fluid surrounding the body
 - D Fluid in the intercellular spaces
- 4 Which of the following best describes a semi-permeable membrane?
- A It allows only water molecules to pass through it
 - B It allows water soluble molecules to pass through it
 - C It allows only certain molecules to pass through it
 - D It allows only certain molecules to pass into the cell but not out of it
- 5 The figure shows a structure that can be found in a cell.



Which of the followings is true about X and Y ?

	X	Y
A	Phospholipid	Carrier Protein
B	Phospholipid	Pore Protein
C	Glycolipid	Carrier Protein
D	Glycolipid	Pore Protein

6 The figure below shows the structure of one type of plant cell.



Which of the following statements identifies this cell and its position in the plant?

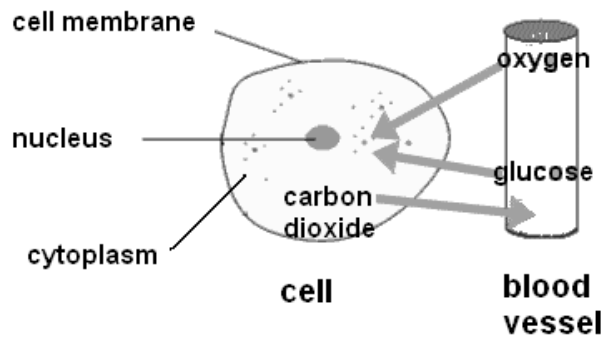
- A Cell of a root cortex
- B Epidermal cell of a leaf
- C Mesophyll cell of a leaf
- D Cell in a root meristem

7 Which of the following statements is true about the cell and the presence of a particular organelle in higher density?

- I. Sperm – ribosome
- II. Muscle cell - mitochondrion
- III. Liver cell – smooth endoplasmic reticulum
- IV. Palisade mesophyll cell – rough endoplasmic reticulum

- A I and II only
- B II and III only
- C III and IV only
- D I and IV only

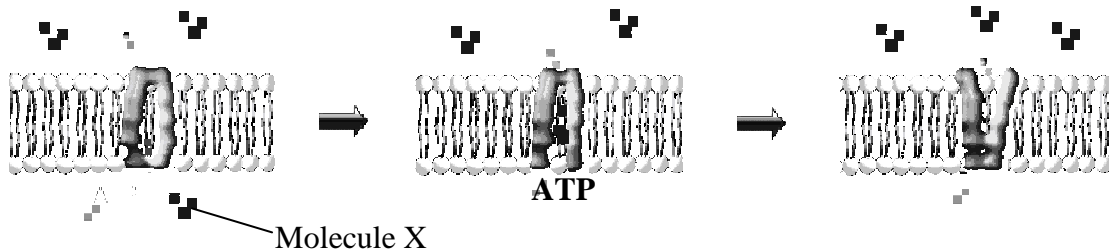
8. The figure shows a cell adjacent to a blood vessel



Which of the following factors causes the substances to move in the directions shown?

- A Metabolic energy
- B Concentration gradient
- C The presence of a cell membrane
- D The presence of a permeable membrane

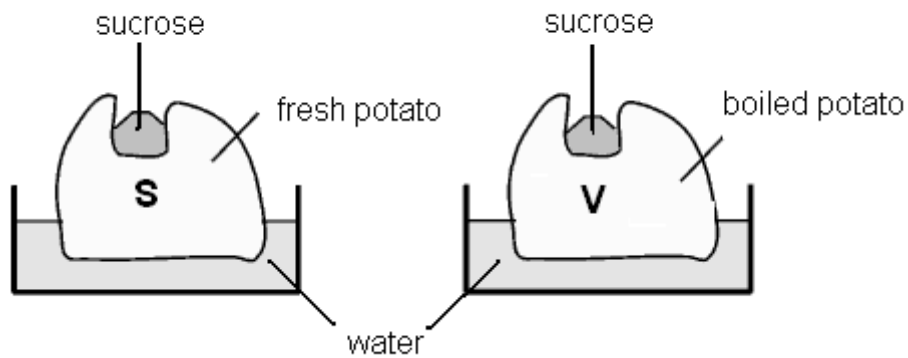
9 The figure shows how molecule X moves across a plasma membrane.



Which of the following processes is true about the movement of molecule X?

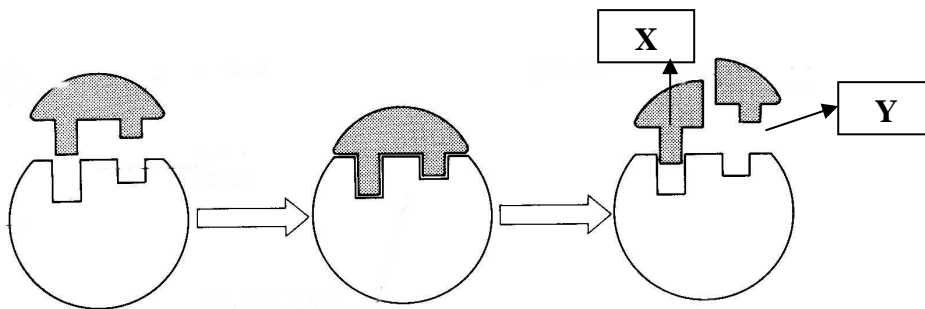
- A Osmosis
- B Simple Diffusion
- C Facilitated Diffusion
- D Active transport

- 10 The diagram below shows an experiment on osmosis where a fresh potato and a boiled potato were placed in water and then left overnight.



Which of the following is the correct result?

- A Both cavities in S and V contain solid sucrose
 - B Both cavities in S and V contain dissolved sucrose
 - C The cavity in V contains dissolved sucrose whereas the cavity in S contains solid sucrose
 - D The cavity in S contains dissolved sucrose whereas the cavity in V contains solid sucrose
- 11 The diagram shows the action of an enzyme sucrase on sucrose.



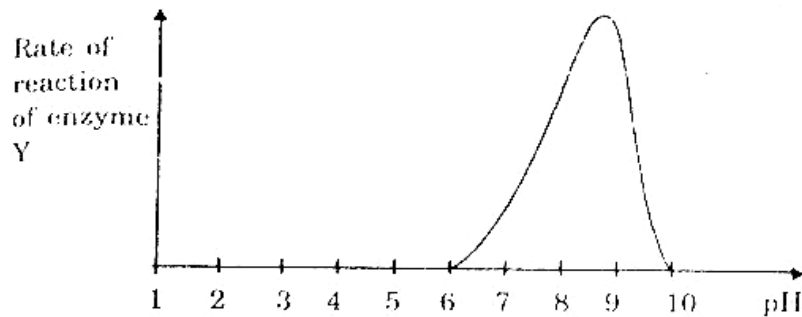
X and Y represent

- A Glucose and Glucose
 - B Glucose and Maltose
 - C Glucose and Fructose
 - D Glucose and Galactose
- 12 Which of the following carbohydrates is **not** a disaccharide?
- A Lactose
 - B Maltose
 - C Sucrose
 - D Fructose

13 Which of the following is the function of the enzyme papain in food processing?

- A To tenderise meat
- B To soften vegetables
- C To detach fish flesh from the skin
- D To hydrolyse lipids into fatty acid and glycerol

14 The graph shows the effect of pH on an enzyme-controlled reaction which is catalysed by an enzyme Y.



Which of the following is the enzyme Y?

- A Rennin
- B Pepsin
- C Trypsin
- D Salivary amylase

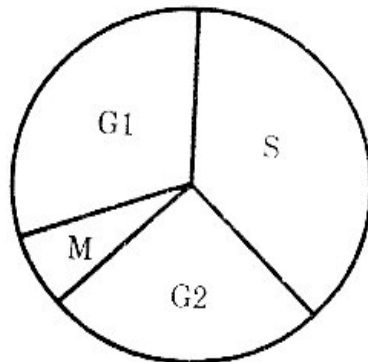
15 The statement below is a characteristic of enzyme lactase.

Lactase can only act on lactose but not on other carbohydrates

Which of the following refers to the characteristic above?

- A Reversible reaction
- B Specificity of action
- C Required in small quantity
- D Not destroyed after reaction

- 16 The diagram shows four stages in a cell cycle of an organism.



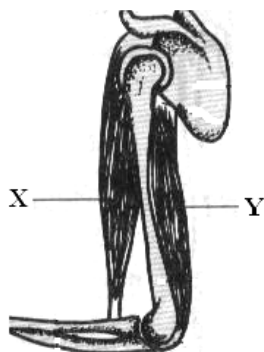
- Which of the following stages is the stage prior to cell division?
- A G_1
B S
C G_2
D M
- 17 Each member of homologous chromosomes moves to the opposite poles of a dividing cell during
- A Mitosis
B Meiosis I
C Meiosis II
D Interphase
- 18 Which of the following statements is **true** about cancerous cell?
- I unable to synthesize DNA
II divides without control to form tumour
III a genetic disease caused by uncontrolled mitosis
IV divide freely without heeding the control system of the cell cycle
- A. I, II, III
B. I, II, IV
C. II, III, IV
D. I, II, III and IV
- 19 In some organisms, mitosis occurs without cytokinesis occurring. This will result in the formation of
- A cells lacking nuclei
B cells that is unusually small
C cell cycles lacking in S phase
D cells with more than one nucleus.

- 20 Which of the following statements are **true** about the differences between mitosis and meiosis?

	Mitosis	Meiosis
I	Parent cell is diploid	Parent cell is haploid
II	Daughter cell is diploid	Daughter cell is haploid
III	Produces variation	Does not produce variation
IV	Involves one division only in one cycle	Involves two divisions in one cycle

- A I and III only
 B II and IV only
 C I,II and III only
 D I, II, III and IV

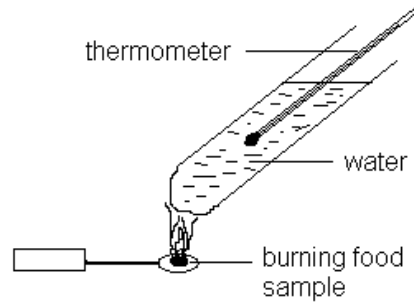
- 21



The figure shows the structure of a human arm with muscle X and Y. Which of the following pair of muscles action is true when the arm is straightened?

- | | <u>Muscle X</u> | <u>Muscle Y</u> |
|---|-----------------|-----------------|
| A | contracts | relaxes |
| B | relaxes | contracts |
| C | contracts | expands |
| D | expands | contracts |
- 22 A solution X produces a purple colour with the Biuret test and brick red precipitates with the Millon's test. Which of the following is present in the solution X?
- A Proteins
 B Carbohydrate
 C Proteins and carbohydrate
 D Carbohydrate and lipids

23



Four different types of food samples, but of the same mass were burnt as shown in the figure above. The temperature of water in the boiling tube is taken before and after the experiment. Which of the following food samples labeled P, Q, R and S contains the largest amount of lipids?

	Food sample	Initial temperature of water/ $^{\circ}\text{C}$	Final temperature of water/ $^{\circ}\text{C}$
A	P	18	37
B	Q	17	94
C	R	17	86
D	S	18	74

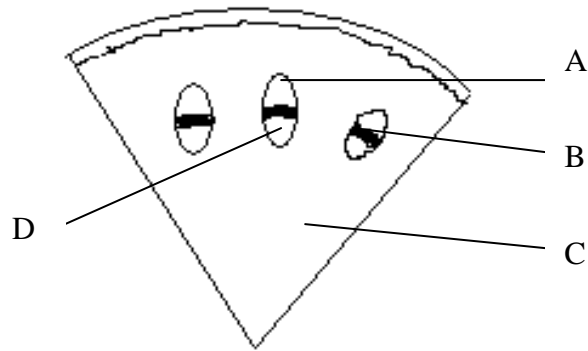
24 The figure below shows some information regarding a washing powder, brand Z.

WASHING POWDER
BRAND Z
Removes blood stains and oil residues very effectively

Which of the following enzymes are most probably present in the washing powder ?

- A Lactase and rennin
- B Rennin and amylase
- C Amylase and lipase
- D Protease and lipase

25



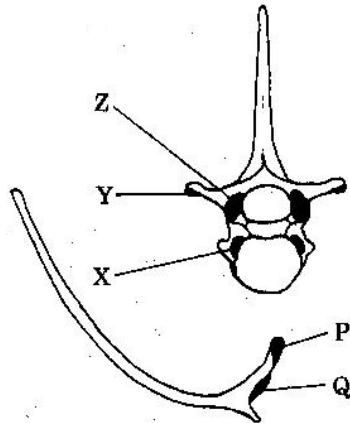
A certain plant is exposed to radioactive carbon dioxide during daytime. A segment of the cross section of the stem is shown in the figure above. Which of the tissues A, B, C or D of the stem is the first to show radioactive traces?

26



The above photograph shows a boy suffering from

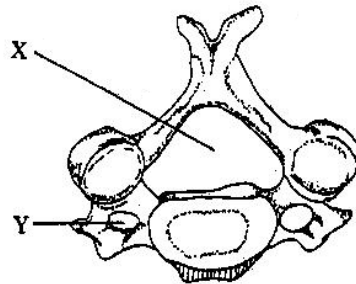
- A diabetes
- B anorexia nervosa
- C kwashiorkor
- D Thalassemia



27 The figure above shows a thoracic vertebra together with a human rib. How is the rib attached to the thoracic vertebra?

- A P is at X and Q is at Y
- B P is at X and Q is at Z
- C P is at Y and Q is at X
- D P is at Z and Q is at X

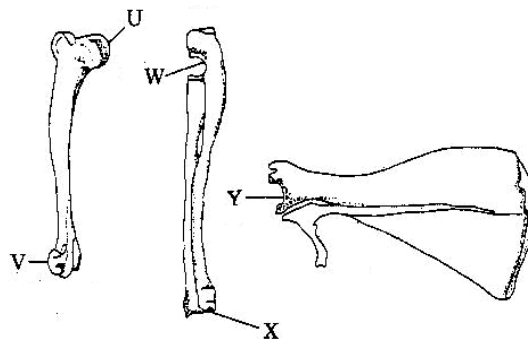
28



The figure shows a posterior view of a human cervical vertebra. What are the structures located in the parts labelled X and Y in a living human?

	<u>X</u>	<u>Y</u>
A	neuron	blood vessel
B	blood vessel	spinal cord
C	spinal cord	blood vessel
D	blood vessel	neuron

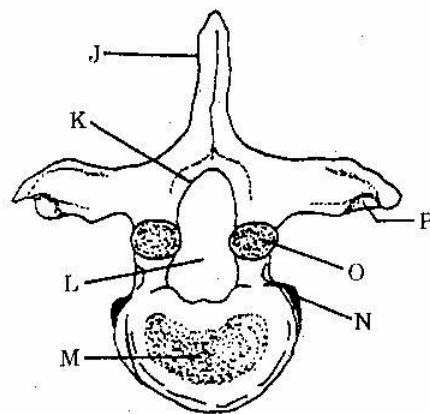
29



The figure above shows four skeletal bones, the humerus, radius, ulna and the scapula. Which parts of the bones labelled U, V, W, X and Y form the hinge joint?

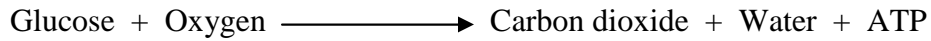
- A U and Y
- B X and Y
- C V and X
- D V and W

30

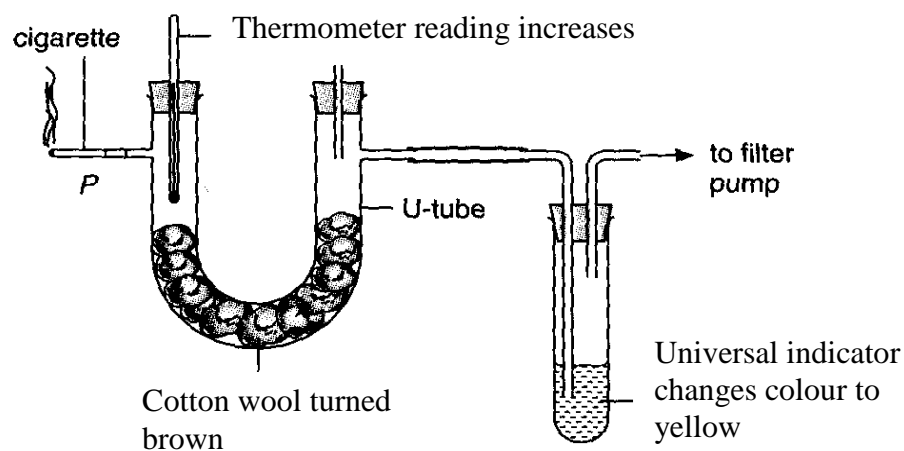


The above figure shows the anterior view of a thoracic vertebra. Which of the parts labelled J, K, L, M, N, O and P are also found in the cervical and lumbar vertebrae?

- A L, M, P and O only
- B J, K, L and M only
- C J, K, L, M, N and O only
- D K, L, M, N and P only



- 31 The equation above shows
- A aerobic respiration
 - B anaerobic respiration
 - C hydrolysis of glucose
 - D condensation of glucose
- 32 Air is inhaled when
- I the diaphragm muscles relax
 - II the external intercostal muscles relax
 - III the rib cage moves upwards and outwards
 - IV the pressure in the thoracic cavity decreases
- A I and III only
 - B III and IV only
 - C I, II and III only
 - D I, III and IV only
- 33 The process of photosynthesis and respiration can be considered as a cycle because
- A both gives off oxygen
 - B both processes use energy
 - C respiration occurs only in animals while photosynthesis occurs in plants
 - D the products of one process are used as the raw materials in the other process
- 34 The figure shows an experiment to demonstrate the effect of cigarette smoke on the lungs.



Based on the results of the experiment, what conclusions can be drawn about the effects of cigarette smoke on the human respiratory system?

- I Cigarette smoke is acidic.
- II Cigarette smoke emits a strong smell.
- III Cigarette smoke causes an increase in the temperature of the lungs.
- IV Cigarette smoke causes tar to be deposited in the alveoli.

- A I, II and III only
- C I, III and IV only
- B II, III and IV only
- D I, II, and IV only

- 35 **K, L, M, N** and **O** describe the mechanism of inhalation in a fish which **is not** in the correct sequence.

- K** The opercular cavity is enlarged.
- L** The mouth opens.
- M** The floor of the buccal cavity is lowered.
- N** Water containing dissolved oxygen is drawn into the mouth.
- O** The operculum closes.

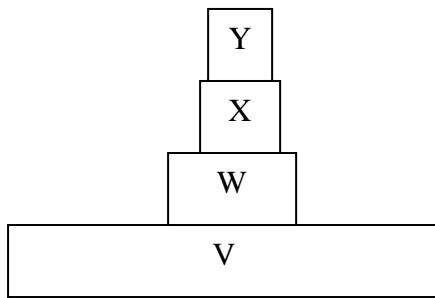
Arrange K, L, M, N and O in the correct sequence ?

- A K,M,L,O,N
- C L,O,M,K,N
- B M,L,N,K,O
- D L,M,K,O,N

- 36 What is the correct sequence of ecological change that occurs to a barren land over a long period of time?

- A Colonization, climax community, succession
- B Succession, colonization, climax community
- C Colonization, succession, climax community
- D Succession, climax community, colonization

37 The figure shows a pyramid of numbers



Which of the following is **not true** about the organisms in the pyramid.

	V	W	X	Y
A	Holophytic	Holozoic	Holozoic	Holozoic
B	Autotrophic	Autotrophic	Heterotrophic	Heterotrophic
C	First trophic level	Second trophic level	Third trophic level	Fourth trophic level
D	Producer	Primary consumer	Secondary consumer	Tertiary consumer

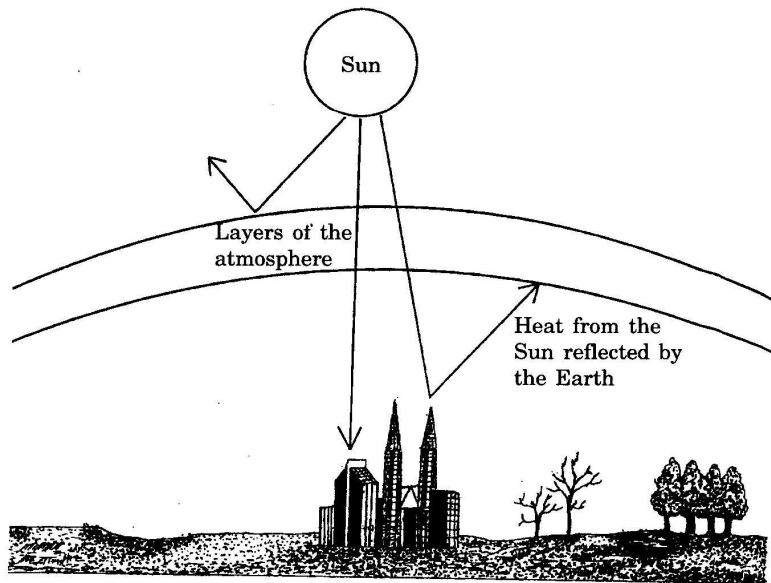
38 The table shows the results of an experiment to study the population of garden snails in a vegetable farm.

Sequence of Capture	Number of garden snails captured	
First	200 marked	
Second	50 marked	80 unmarked

What is the approximate population of the snails in the farm?

- A 125
- B 320
- C 330
- D 520

- 39 The figure shows an environmental phenomenon.



What is the phenomenon?

- A Green house effect
 - B Air pollution
 - C Ozone depletion
 - D Radiation effect
40. The following information is about eutrophication.

P – Algae grow and cover the surface of the lake
 Q – The rate of bacteria reproduction increases
 R – BOD of water increases
 S – Organic fertilizer flows into the lake

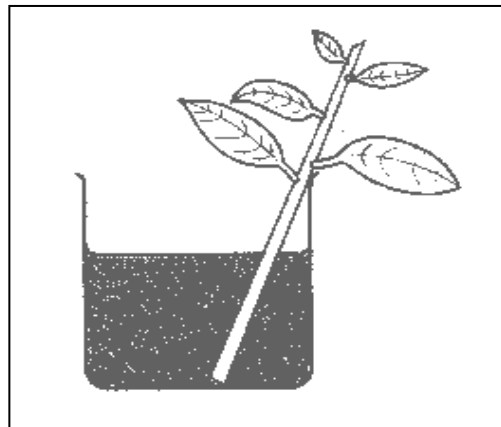
Which of the following sequences is correct about the eutrophication process?

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

- 41 A plant is exposed to different temperatures and humidities.
Which set of conditions causes the plant to lose the least amount of water ?

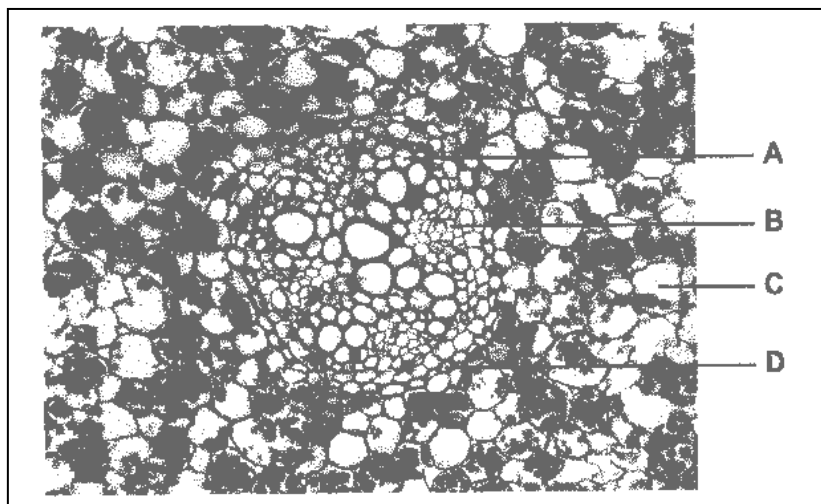
	Temperature/ C	Humidity/%
A	15	30
B	15	60
C	25	30
D	25	60

42. A plant shoot is left in eosin solution for several hours.

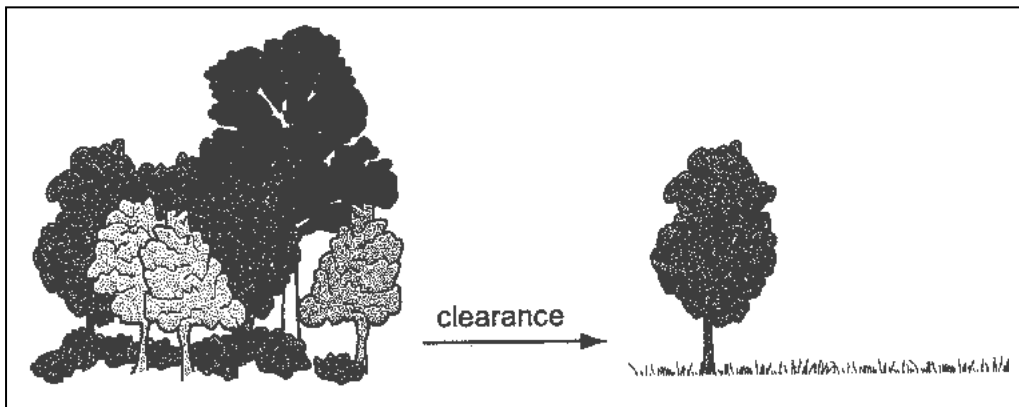


A cross-section is cut through the stem and is viewed with a light microscope of low magnification (x40). What would you see?

- A. The cortex will be stained red
 - B. The vascular bundles will be stained red
 - C. The xylem will be stained red
 - D. The phloem will be stained red
- 43 The photomicrograph shows a transverse section from the middle of a root of a dicotyledonous plant. In which tissue are sugars and amino acids transported?



- 44 A young plant may wilt when dug up and re-planted in another place. What causes this ?
- A. Translocation has ceased
 - B. The leaves lose water by guttation
 - C. The surface area of the root is reduced
 - D. The roots lose water as a result of plasmolysis
45. A student was bitten by a dog while playing in the field. What treatment should be given to the student?
- A. Antibiotic injection
 - B. Antiserum injection
 - C. Toxoid injection
 - D. Vaccine injection
- 46 Which of the following tissue helps to support an aquatic plant?
- A. Parenchyma
 - B. Collenchyma
 - C. Sclerenchyma
 - D. Aerenchyma
- 47 The diagram shows a tropical forest before and after clearing for agricultural use.



Which of the following effects on the environment is not caused by the above human activity?

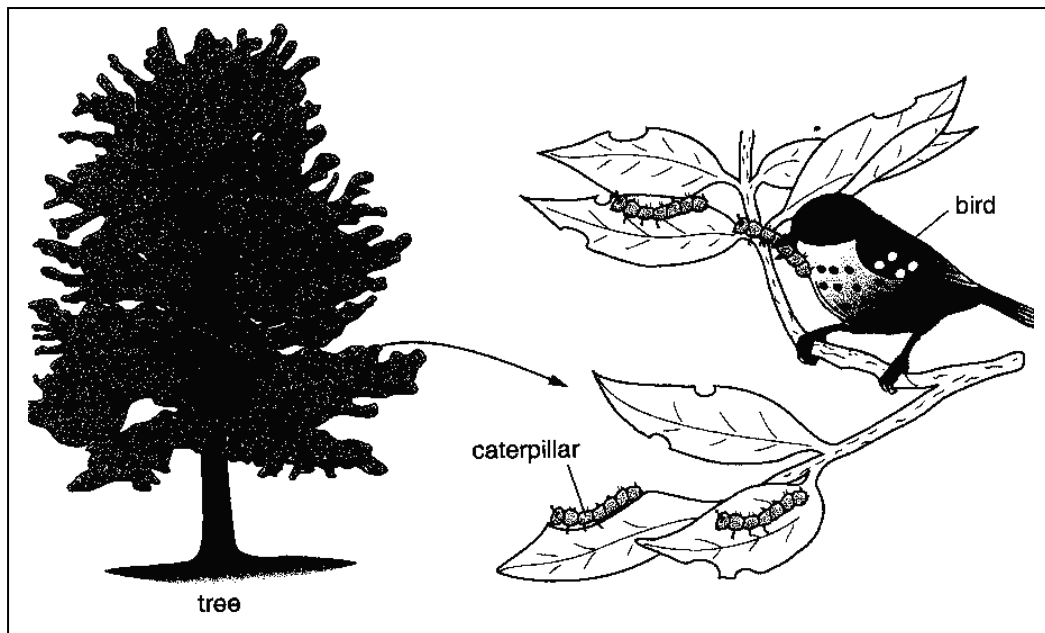
- A. Soil erosion
- B. Flash flood
- C. Greenhouse effect
- D. Thermal pollution

48 The leaching of inorganic fertilizers into rivers causes

- I. Eutrophication
- II. Low biochemical oxygen demand
- III. Water pollution
- IV. Algal blooms

- A. I, II and III
- B. I, II and IV
- C. I, III and IV
- D. II, III and IV

49 The figure below shows some organisms living together in a tree.



Which of the following factors can destroy this interaction?

- I. Deforestation
- II. Use of pesticides
- III. Acid rain
- IV. Thinning of the ozone layer

- A. I, II and III
- B. I, II and IV
- C. II and III
- D. I, II, III and IV .

- 50 The following information shows some steps in the reactions during the destruction of the ozone layer.
- I. Ultra violet rays break down the chlorofluorocarbons (CFCs) to produce free chlorine atoms
 - II. Free chlorine atoms react with ozone molecules to produce chlorine monoxide and oxygen molecules
 - III. Free fluorine atoms react with ozone molecules to produce free oxygen atoms
 - IV. Free oxygen atoms will break the chlorine monoxide bonds
- A. I,II and III
 - B. I,II and IV
 - C. I and II
 - D. I,II,III and IV

END OF QUESTION PAPER