

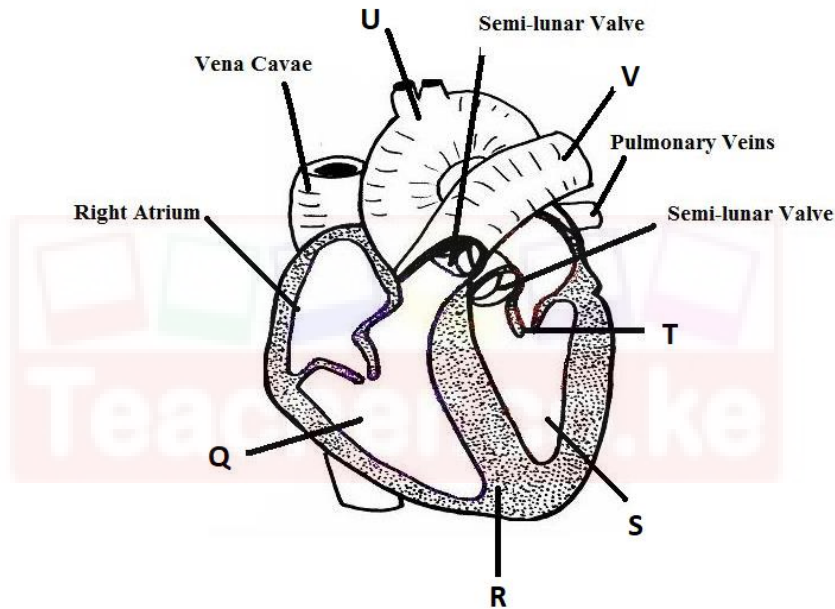
**Term 1 - 2024
BIOLOGY
FORM TWO**

Marking Scheme

Answer all the questions provided.

1. Why does the fluid of transport in insects loosely called blood lack of pigment equivalent to haemoglobin? (2 marks)
 - pigments in blood are meant to transport O₂ and CO₂
 - O₂ is conducted directly to tissues by the tracheoles.

2. Study the diagram below to answer the questions that follow.



- (a) What is the role of sino atrio node of the heart? (2 marks)
 - **cardiac muscles has SAN/sino-artrio node; that initiate heart beat/contraction of heart muscels/cardiac muscles;**

- (b) Differentiate between components of part labelled U and V. (2 marks)

U - Aorta	V- Pulmonary artery
- Blood flow at higher pressure	- Blood flows at lower pressure;
- Oxygenated blood	- Deoxygenated blood;

- (c) In developing foetus, blood in structure Q and S mix. Name the structure responsible for this kind of mixing. (1 mark)

- **Foramen ovale;**

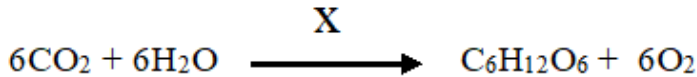
(d) Name the congenital disease that comes as a result of the structure named above not able to restore itself after birth. (1 mark)

- **Blue babies;**

(e) Identify part labeled **R**. (1 mark)

- **Interventricular septum;**

3. Below is an equation showing a certain metabolic process.



(a) Name the process shown above. (1 mark)

- **Photosynthesis;**

(b) Name the requirement labeled **X**. (1 mark)

- **Sunlight;**

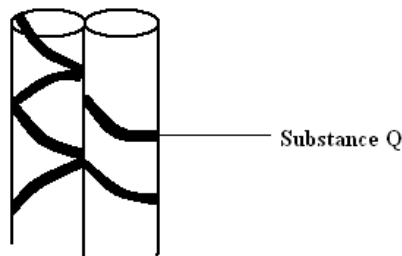
(c) State **three** substances with the same formula $\text{C}_6\text{H}_{12}\text{O}_6$ as in above equation. (3 marks)

- **Glucose; fructose; galactose;**

(d) Name the organ, tissue, cells and organelle where the reaction shown above takes place. (4 marks)

Organ	
Tissue	
Cell	
Organelle	

4. The diagram below represents a structure of xylem vessel. Study it to answer the questions that follow.



(a) Name substance **Q**. (1 mark)

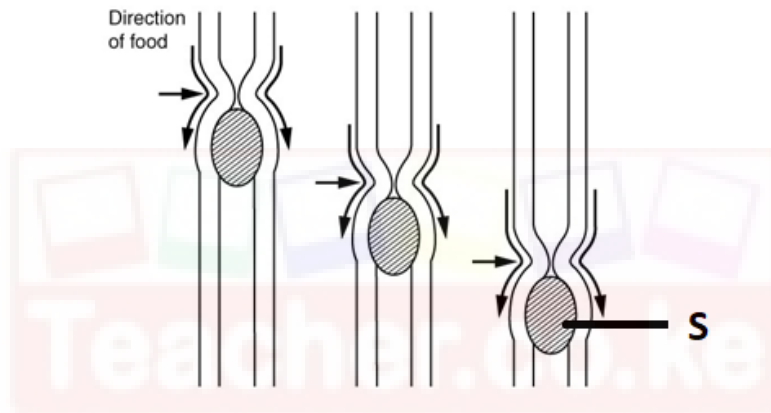
- **Lignin;**

- (b) How is the above structure adapted to its function. (1 marks)
- **They are hollow tubes;**
 - **They are made of dead cells placed end to end.;**
 - **Walls thickened with lignin to prevent them from collapsing as water is being transported up the plant;**

- (c) State **two** functions of roots in plants. (2 marks)
- **Stoage; anchorage of plants onto the soil; - perennation; - gaseous exchange;**

- (d) Name another cell that forms the Xylem tissue other than xylem vessel. (1 mark)
- **Tracheids;**

5. The diagram below represents a stage in the digestion of food along gastrointestinal track.



- (a) By what mode does the represented organism feed? (1 mark)
-

- **Holozoic;**

What is the name given to the:

- (i) Wave of muscular contraction above. (1 mark)

- **Peristalsis;**

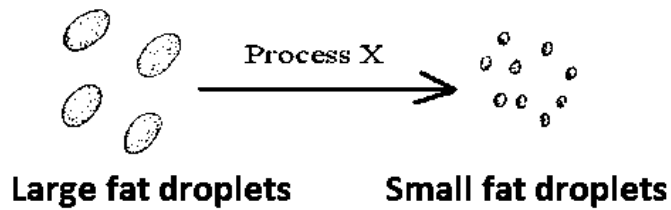
- (ii) The substance named S. (1 mark)

- Bolus;

- (b) Name **three** parts of alimentary canal represented by the above drawing. (3 mark)
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- **Oesophagus; intestines; rectum;**

(c) The process shown below takes place during the digestion of Lipids.



Where does it take place in mammals and what is its importance? (2 marks)

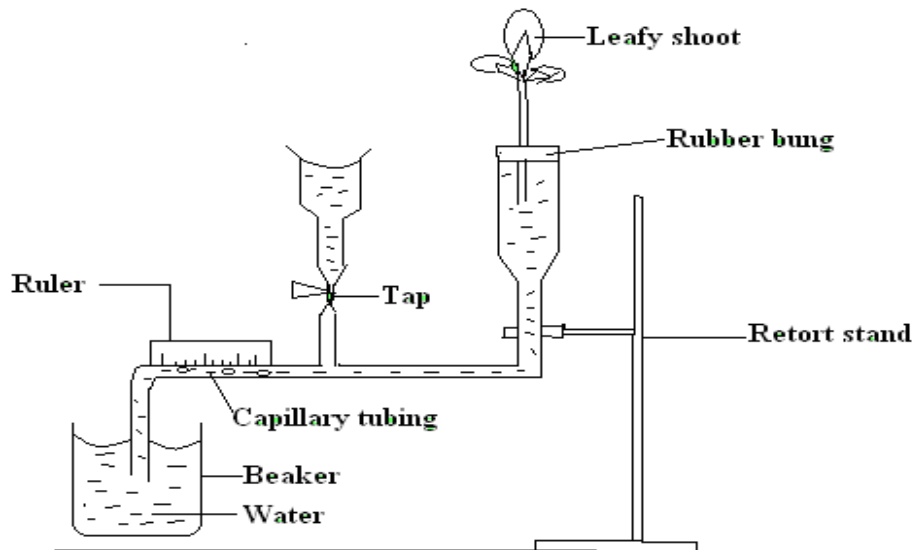
- **Duodenum;**

(e) State the **two** differences in Monocotyledonous stem and Dicotyledonous stem.

(2 marks)

Monocotyledonous	Dicotyledonous
- Vascular bundles scattered	- vascular bundles are few and arranged in a ring near the epidermis
- some have hollow pith or pith is absent	- pith large and well developed;
- no cambium layer therefore cannot undergo secondary growth	- presence of cambium therefore - undergoes secondary growth;
-	-

6. The figure below shows an experimental set – up to investigate a certain aspect of transport in plants.
A set up that was used to investigate a certain process in plants is shown in the diagram below.



- (a) What process was being investigated? (1 mark)
- rate of transpiration;
- (b) (i) State **two** precautions that should be taken when setting up the experiment. (2 marks)
- The shoot should be cut under water;
- Shoot - glass tube junction should be bunged;
- (iii) Give a reason for each precaution stated in b (i) above. (2 marks)
- To prevent air from entering the xylem;
- To make it airtight;
- (d) State **three** environmental factors that influence the process under investigation. (3 marks)
High light intensity; - high temperature; - wind;
- (f) Giving reason explain the difference you would expect if the measurements were repeated under the following conditions:-
 (i) Shoot is placed near a heat source. (1 mark)
- The bubble moves faster; as evaporation increased with increase in temperature;
 (ii) Shoot enclosed in a polythene bag. (1 mark)
- The bubble moves slower; as moisture/ humidity increased lowering saturation deficit, hence reducing transpiration;
- (iii) The set-up was placed in a dark room. (1 mark)
- The bubble moves slower; as more stomata close in darkness;

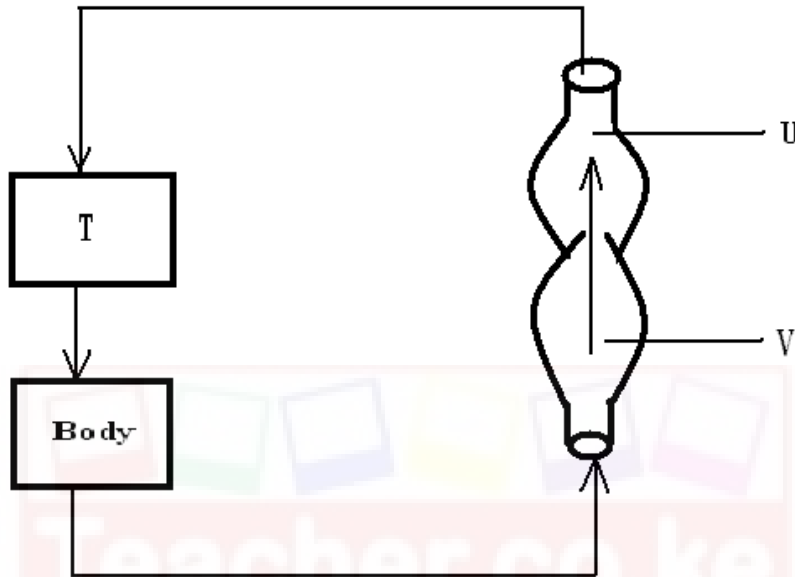
(ii) Shoot is placed in a current of air create by fan. (1 mark)

- **The bubble moves faster; as drought reduced the saturation deficit**

(i) Some of the leaves were removed. (1 mark)

- **bubble move at a slower rate since removal of some leaves reduced surface area;**

7. The diagram below shows single circulation in a fish.



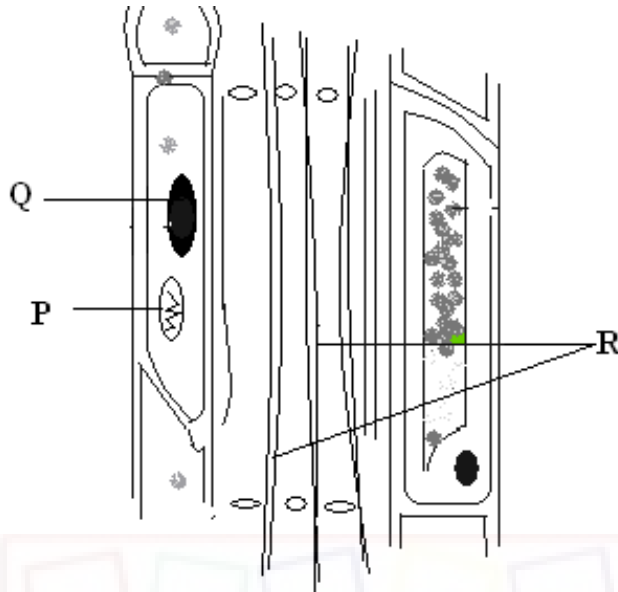
(a) Name the parts labeled **T**, **U** and **V**. (3 marks)

T – Gills;
U - Ventricle;
V – Auricle;

(b) How is the type of circulation different from that found in man. (1 mark)

- **In human, they exhibit double circulatory system;**

- (8) The diagram below represents part of a phloem tissue. Study it to answer the question that follow.



- (a) Name the structures labeled **P**, **Q** and **R**. (3 marks)
- P** - Mitochondrion; rej Mitochondria
Q - Nucleus; rej Nuclei
R - Cytoplasmic strands/ cytoplasmic filaments;
- (b) State the function of the phloem tissue. (1 mark)

- **Translocation;**

- (c) (i) State how the functioning of the phloem tissue is affected if the companion cell is destroyed. (1 mark)

- **Translocation stops;**

- (ii) Give a reason for your answer. (1 mark)

- **Companion cells has the mitochondria that produce the energy required for the active transport that facilitate the process OWTTE**

- 9 (a) Give a summary of the following processes of photosynthesis.

- (i) Light stage. (4 marks)

- **it takes place in grana; when chlorophyll molecules absorbs light; it is used to split up water molecules into hydrogen ions; and oxygen gas; This is known as photolysis; max 4 marks**

- (ii) Dark stage. (1 marks)

- **Carbin (IV) oxide combines with Hydrogen ions from the light stage forming glucose;**

8. What do you understand by the following terminologies.

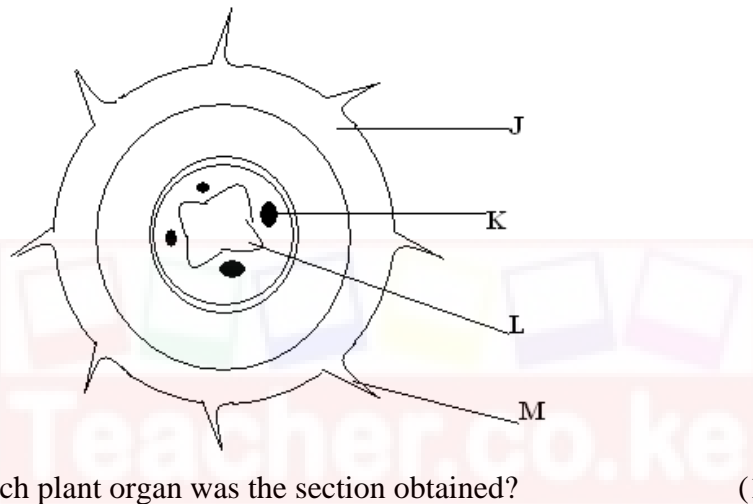
Open circulatory system (1 mark)

- **The transport fluid is contained in the general body cavity/ coelom/ sinuses**

(a) Closed circulatory system (1 mark)

- **The transporting fluid (blood) is conveyed in special tubes referred to as blood vessels;**

9. The diagram below represents a transverse section through a plant organ.



(a) From which plant organ was the section obtained? (1 mark)

- **roots;**

(b) Give two reasons for your answer in (a) above. (2 marks)

- **Star-shaped xylem; root hairs resent; absence of pith;**

(c) Name the labeled parts **J, K, L** and **M**. (4 marks)

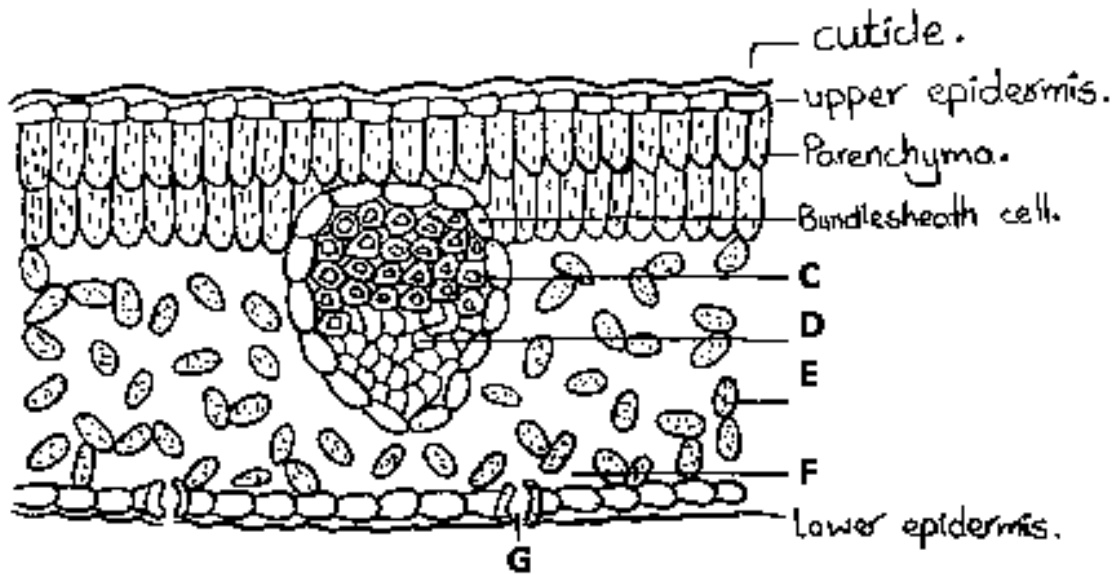
J – epidermis;

K – phloem;

L – xylem;

M – root hair; rej root hairs

10. Study the diagram below and use it to answer the questions that follow.



(a) Name the organ shown in the drawing above. (1 mark)

Leaf;

(b) Identify the parts labeled **C** and **D**. (2 marks)

C- Xylem;

D – Phloem;

(c) Explain the concept of transpirational pull as it may take place in the structure drawn above.

(3 marks)

Energy from the sun causes evaporation of water; increasing the diffusion gradient between the atmosphere and the mesophyll cells which leads to water vapour diffusing into the atmosphere; The mesophyll cells draw water from the xylem; The water from the xylem is replaced by a continuous column of water known as transpiration stream moving up the roots,;

(d) Name **three** other forces responsible for movements of water and mineral ions in a stem of a tall plant. (3 marks)

Cohesion; adhesion; root pressure;

