**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.
1. Study the diagram below to answer the questions that follow.



1. 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 muscles/cardiac muscles;**
1. 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;
 |

1. In developing foetus, blood in structure **Q** and **S** mix. Name the structure responsible for this kind of mixing. (1 mark)
* **Foramen ovale;**
1. 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;**
1. Identify part labeled **R**. (1 mark)
* **Interventricular septum;**
1. Below is an equation showing a certain metabolic process.

 

1. Name the process shown above. (1mark)
* **Photosynthesis;**

………………………………………………………………………….

1. Name the requirement labeled **X**. (1mark)
* **Sunlight;**

…………………………………………………………………………………………………

1. State **three** substances with the same formula C6 H12 O6 as in above equation.

 (3 marks)

* **Glucose; fructose; galactose;**
1. Name the organ, tissue, cells and organelle where the reaction shown above takes place. (4 marks)

|  |  |
| --- | --- |
| **Organ** |  |
| **Tissue** |  |
| **Cell** |  |
| **Organelle** |  |

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

 

1. Name substance **Q**. (1 mark)
* **Lignin;**
1. 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;**
1. State **two** functions of roots in plants. (2 marks)
* **Stoage; anchorage of plants onto the soil; - perennation; - gaseous exchange;**
1. Name another cell that forms the Xylem tissue other than xylem vessel. (1 mark)
* **Tracheids;**
1. The diagram below represents a stage in the digestion of food along gastrointestinal track.

 

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

**………………………………………………………………………………………………**

* **Holozoic;**

 What is the name given to the:

1. Wave of muscular contraction above. (1 mark)
* **Peristalsis;**
1. The substance named **S**. (1 mark)
* Bolus;
1. Name **three** parts of alimentary canal represented by the above drawing. (3 mark)

……………………………………………………………………………………………………………

* **Oesephagus; intestines; rectum;**
1. 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;**
1. State the **two** differences in Monocotyledonous stem and Dicotyledous 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;
 |
|  |  |

1. 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.



1. 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;**
1. 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 ight intensity; - high temperature; - wind;**

1. Giving reason explain the difference you would expect if the measurements were

repeated under the following conditions:-

1. 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;
1. Shoot is placed in a current of air create by fan. (1 mark)
* **The bubble moves faster; as drought reduced the saturation deficit**
	1. Some of the leaves were removed. (1 mark)
* **bubble move at a slower rate since removal of some leaves reduced surface area;**
1. 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 ciculation 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;**
1. 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;**
1. 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**
1. Closed circulatory system (1 mark)
* **The transporting fluid (blood) is conveyed in special tubes referred to as blood vessels;**
1. 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

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

 

1. Name the organ shown in the drawing above. (1 mark)
* **Leaf;**
1. Identify the parts labeled **C** and **D**. (2 marks)

 **C- Xylem;**

 **D – Phloem;**

1. Explain the concept of transpirational pull as it may takes 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,;**

1. 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;**