**GATITU MIXED SECONDARY SCHOOL**

**THIRD TERM 2015**

**FORM 1 BIOLOGY ENDTERM EXAMS**

1. Explain how drooping of leaves on a hot sunny day is advantageous to a plant. (2mks)

2. a) What is diffusion? (2mks)

 b) How do the following factors affect the rate of diffusion?

 i) Diffusion gradient (1mk)

 ii) Surface area to volume ratio (1mk)

 iii) Temperature (1mk)

 c) Outline 2 roles of active transport in the human body (2mks)

3. State the importance of osmosis in plants (3mks)

4. An experiment was set up as shown in the diagram below.



 The set up was left for 30 minutes.

 a) State the expected results. (1mk)

 b) Explain your answer in (a) above. (3mks)

5. Explain why plant cells do not burst when immersed in distilled water. (2mks)

6. Distinguish between diffusion and osmosis. (2mks)

7. Define the following terms in relation to a cell

 a) Isotonic solution

 b) Hypotonic solution

 c) Hypertonic solution (3mks)

8. Addition of large amounts of salt to soil in which plants are growing kills the plants. Explain (6mks)

9. Explain why

a) Red blood cells burst when placed in distilled water while plant cells remain intact. (2mks)

b) Fresh water protozoa like amoeba do not burst when placed in distilled water. (2mks)

10. State the role of light in the process of photosynthesis. (2mks)

 Name one product of dark reaction in Photosynthesis (1mk)

11. Photosynthesis takes place in two stages. Name the part of the chloroplast where

i) Light stage occurs (2mks)

 ii) Dark stage occurs (2mks)

 Marking scheme (40mks)

1. The leaves expose a smaller surface area to the sun. Thus reducing transpiration/excessive water loss.

2 a) Diffusion is defined as the net movement of a substance from a

 region where its concentration is high to a region where its concentration is low.

 b) i) Diffusion gradient-the greater the diffusion gradient, the

 greater the rate of diffusion

 ii) Surface area to volume ratio-the greater the S.A.V.R the

 higher the temperature the greater the rate of diffusion.

 iii) Temperature –The higher the temperature the greater the

 rate of diffusion

 c) i) Absorption of mineral salts from the soil by root hairs

 ii) Re-absorption of glucose molecules in the kidney tubule.

 iii) Absorption of digested food in the ileum e.g glucose,

 amino acids.

 3. i) Uptake of water from the soil into root hairs of plant roots

 ii) Movement of water from the veins of leaves through the leaf cells

 to the atmosphere during transpiration.

 4. a) The visking tubing was fully filled with solution. Level of water in

 beaker decreased .

 b) Sucrose solution in visking tubing created high concentration

 gradient.

 -Water molecules moved from distilled water to the visking tubing

 by osmosis.

 5. -Plant cells have cells membrane and cell wall. When the cell is placed or

immersed in distilled water, the water is absorbed by osmosis. As cell becomes turgid, the cell created an inward force, wall pressure that prevents the cell from bursting.

6.

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| **Diffusion** | **Osmosis** |
| * Involves movement of particles of molecules of liquid or gas.
* It may be through a membrane or in air.
* Not affected by PH changes.
 | * + - * Involves movement of solvent
			* It takes place through a semi-permeable.
			* Rate affected by pH changes.
 |

 7. a) Isotonic solution- a solution which has the same concentration as

 the cell sap.

 b) Hypotonic solution- a solution which is less concentrated than the

 cell sap.

 c) Hypertonic solution- A solution which is more concentrated than

 the cell sap.

 8. Plants normally grow in soils whose solute concentration is lower than that of the cell sap. This enables the plants to take up water by osmosis. Addition of large amounts of salt to the soil increases the solute concentration of soil water beyond that of the cell sap. The result is that the plants lose water to the soil by osmosis. Since water is very important for maintaining the structural and metabolic activities of plants, its deficiency leads to death of the plants.

 9. a) The red blood cells take in water by osmosis. They swell and exert pressure on the fragile plasma membrane which then breaks. Plant cells take in water and swell but do not burst. This is because their tough cell wall can only stretch to a limited extent. Once fully stretched, the cell wall resists further expansion of the cell and no more water is taken up.

 b) Fresh water protozoa take in water by osmosis. The excess water

 is then actively pumped into the contractile vacuole which discharges the water to the outside.

 10. a) Split water molecules/photolysis

 b) Glucose

 11. a) i) Light stage-grana

 ii) Dark stage-stroma

 b) -Uses the energy formed or produced during light stage.

 -Uses the hydrogen ions produced in light stage for carbon dioxide

 fixation.