**BIOLOGY FORM 1, MID TERM 3 EXAM – 2022**

1. .
2. State and define the two main branches of biology (2mks)

**Botany \_ Study of plants**

**Zoology – study of animals**

1. State four reasons why biology should be studied. (4mks)
* **Carreer subject**
* **Impacts scientific skill eg observing, identifying, recording**
* **Solve environmetal problem eg shortage of food.**
* **Useful in international co - operation**
1. List four differences between a plant and an animal. (4mks)

|  |  |
| --- | --- |
| **`Plants** | **Animals**  |
| Have chlorophyll hence make their own food | Lack chlorophll hence food on ready made food |
| Respond slowly to change in their environment | Respond quiklly  |
| Do not move about | Move about |
| Lack specialised excretory organs  | Have complex excretory |

1. .
2. Distiguish between autotrophism and hetortrophism. (2mks)

**Autotrophism-**  **mode of nutrition in which plants manufacture complex food substances from simple substances.**

**Heterotrophism – mode of nutrition that involve taking in comples food substances obtained from bodies of plants and animals.**

1. State and explain two heterotrophic modes of nutrition. (4mks)

**Holozoic – Type of nutrition in which living organisms take in complex ood materials from bodies of plants and animals.**

**Saprophytism – type of nutrition where organisms obtain nutrition from dead organic matter**

**Parasitism – association where one organisms (parasite) obtains nutrients from tissue of another living organism (host)**

1. A student sep up the experiment shown below to investigage photosynthesis.
2. State the aim of the experiment. (2mks)

**To investigate the gas produced during photosynthesis.**

1. Explain why;
2. Sodium hydrogen carbonate was added to water. (1mk)

**To increases carbon (iv) oxide cpncentration**

1. A water plant was used. (1mk)

**Synthesis in water**

1. Name gas x (1mk)

**Oxygen**

1. How can a student test for the gas given out. (2mks)

**By using a glowing splint. The gas relight a glowing splint.**

1. State three other factors affecting photosynthesis. (3mks)

**Temperature**

**Light intensity**

**Carbon (iv) oxide concentration**

1. .
2. Define the term photosynthesis . (2mks)

**Process by which green plants manufacture their own food uby use of light energy.**

1. State two importance of photosynthesis. (2mks)
* **Purify the air by absolbing carbon (iv) oxide and givin out oxygen.**
* **Source of food animals depend on plants for food.**
1. Describe three adptaion of a leaf to the process of photosynthesis. (6mks)
* **Broad lamina provide s a large S.A for the absorption of carbon (iv) oxide and light.**
* **Thinness of the leaf tro allow light and carbon (iv) oxide to pass a short distance to reach photosynthesis cells.**
* **Transparent cuticle and epidermis to allow penetration of light.**
* **Veins contains xylem which transports water and mineral salts and pholem transports food.**
* **Symbiosis - Asso**
1. The figure below shows the rate of enzmeaction in relation to changes in temperature. Use it to answer the questions that follows.

 S

 R ● ●T

Rate of

Enzyme

activities

 ●Q ●U

 Temperature

1. Explain givin reasons the rate of enzyme action;
2. Between Q and R. (2mks)

**Rate of enzyme action increased with increase in temperature up to the optimum level because the enzyme are activited**

1. At S (2mks)

**Rate of enzyme action is highest because the temperatures are optimum**

1. Netween T and U (2mks)

**Rate of enzyme actiction decrease with increase in temperature beyond the optimum because the enzymes have been denatured.**

1. Other than the property investigate above, state three other properties of enzymes. (3mks)
* **Specific in nature**
* **Enzyme catalysed reactions are reversible**
* **Are sensitive to PH**
* **They speed up rate of cellular reactions.**
* **Are protien in nature.**
1. .
2. Haemolysis and crenation. (2mks)

**Haemolysis – acting of red blood cells when placed in hypotonic solution**

**Crenation – a process by which an animal cell loose water abd shrink when placed in hypertonic solution.**

1. Turgor pressure and wall pressure. (2mks)

**Turgor pressure – an outward pressure exerted by the vacuole on the wall when it enlarges after gaining water.**

**Wall pressure – pressure exerted by cell wall that is resistant to streaching and its equal to opposite to turgor pressure.**

1. Hypotonic and hypertonic solutions. (2mks)

**Hypotonic – a lowly concentrated solution – more solvent , less solute**

**Hypertinic – a highly concentrated solution - more solute, less solvent.**

1. Cofactors and aco – enzymes. (2mks)

**Co – factor – inorganic non – protein substance used to activite enzymes.**

**Co – enzymes – organic non – protein substance used to activate particular enzyme .**

1. Competitive and non – competitive inhibitors. (2mks)

**Competitive – they compelet with normal substates for active sites of the enzymeslowing down the enzyme action.**

**Non – competitive – do not compelete for active sites, but combine permanently with enzyme molecules those blocking active site.**

1. .
2. State the function s of the following parts of the light microscope. (3mks)
3. Diapharm- **Regulates amount of high possing through the condenser**
4. Condenser – **Concentrates light on the objects on stage.**
5. Mirror - **Reflects high through the condenser to the object**
6. State the function of the following cell organelles. (3mks)
7. Nucleus – **Controls all the activities of the cell**
8. Mitochoridria – **Site for respiration**
9. Chloroplast -  **Site for phosynthesis**
10. .
11. What is cell physiology? (1mk)

**Study of the functions of cell structure.**

1. State three roles of diffusion. (3mks)
* **Gaseous exchange**
* **Excretion**
* **Absorbtion of materials (mineral ions from the soil, digested food from dimentary canal)**
* **Transport of manufactured food from leaves to other parts of plants**
1. .
2. What are the building blocks of;
3. Proteins (1mk) – **Amino acids**
4. Lipids (1mk)-  **Fatty acids and glycerol**
5. .
6. State the general formula of carbohydrates. (1mk)

**(CH2O)n**

1. Name the elements that form lipids. (1mk)

**Carbon, Hydrogen, Oxygen**

1. State the collective name of the enzymes which work on; (3mks)
2. Carbohydrates – **Carbohydrase**
3. Protein - **Protease**
4. Lipids- **Lipase**
5. Study the reaction below and answer the questions that follows.

 A

 + +

Glucose fructose B X Y

1. State the biological process that takes place represented by A and B. (2mks)
2. **Condensation**
3. **Hydrolysis**
4. Name product x (1mk)

**Sucrose**

1. The diagram below shows dentition of an animal.
2. .
3. Identify the mode of feeding of the animal with the dentition above (1mk)

**Carnivorous**

1. Give reason for your answer. (2mks)

**Presence of long carred and pointed canines**

**Presence of carnassial teeth**

1. State the adptations and functions of the type of teath labbled B. (2mks)

**Adaptation – long, calved pointed**

**Function – for gripping, piercing and prey**

1. What is the function of the tooth labled A? (2mks)

**Used to slice flesh and crush bones**

1. .
2. What is dentition? (1mk)

**Its the type, number, arrangement and specialisation of teeth**

1. Differentiate between homododont and heterodont. (2mks)

**Homodont – animals with teeth of same size and shap[e**

**Heterodont – animals with teeth of different size and shape**

1. .
2. .
3. Diferentiate between egestion and ingestion. (2mks)

**Ingestion – introduction of food in the mouth**

**Egestion – removal of undigested and indigestible food materials from the body**

1. State the roles of the following enzyems;

Salivary amylose (1mk)

**Digest starch to maltose**

Pancreatic lipose (1mk)

 **Digest lipids to fatty acids and glycerol**

1. State three factors that determine energy required in human being. (3mks)
* **Age**
* **Occupation**
* **Basal metabolic rate**
* **Body size**
1. Name the apparatus used for; (3mks)
2. Catching crawling animals.-  **pit fall trap**
3. Catching flying insects **– Siveep net**
4. Picking stinging insects  **- Pair of forceps**
5. Expalin how the following cells are adapted to carry out their function.
6. Guard cells . (1mk)

**Thin outer walls and thick inner walls, have few choloplast**

1. Root hair cell. (1mk)

**Has increaesd surface area for absorption of water**

1. Calculate the total magnification of a cell observed under a light microscope whose eye piece lens magnification is x 15 and objective lens magnification is x 45. (3mks)

**Magnification = eye piece lens X objective lens**

 **Magnification power magnification power**

 **(x45) x (x15) = x675**