**TERM 1-2023 MID TERM SERIES**

**FORM 4**

**PAPER 1**

**BIOLOGY (MARKING SCHEME)**

1. a) i) and ii)



**SC**

**KC**

**SC**

b) Helps in transport of nutrients/enzymes in cells; Enhance exchange of materials between organelles/cells; help in locomotion in some unicellular organisms/amoeba; Help maintain concentration gradient within cell to enhance diffusion;

1. a) Lactic;

b) Transported to the liver and converted to glycogen; broken down into Carbon (IV) Oxide and Water in the muscles (when Oxygen becomes available/Repayment of Oxygen Deb)t;

1. i) Sertoli cells: Attachment of developing sperm cells; Nourishment of developing sperm cells;

ii) Interstitial cells: Secretion/Production of Androgens/Testosterone;

iii) Regulate Opening and Closing of Stomata to control transpiration/Water loss/gaseous exchange in plants;

1. a) The Beam balance tilted towards the right/part with No twig/Water level in the tube containing the twig reduced;

b) The twig gained water from the test tube then lost it via transpiration from the leaves; making the test tube containing a twig to weigh less;

c) No change in the weight of content of both the test tube/Slight tilt towards the right;

1. a) Red blood cell/Erythrocyte; *rej plural*

b) Monera; *reject monera/wrong spelling*

|  |  |
| --- | --- |
| **Guttation** | **Transpiration** |
| Loss of water from a plant in liquid form | Loss of water from a plant as vapour; |
| Occurs via hydathodes | Occurs via stomata/cuticle/lenticels; |

1. a) Cytoplasm/Sap vacuole has shrunk; Plasma membrane is detached from the cell wall;

b) Diffusion;

c) Hypertonic/More concentrated;

1. a) Islet of Langerhans; b) Corpus luteum;
2. a) Place 1ml of the liquid in a test tube; Add 3 drops of Iodine solution and shake;

*Penalise if Range of drops is used, Iodine only is indicated without Solution*

 b) Brown to Blue Black;

c) Is osmotically inactive (thus can not alter the osmotic pressure of the cells); is insoluble thus can not easily be transported to metabolic sites to be oxidized; *Mark any 1*

1. a) *Rhizobium leguminosarum/Rhizobium fredii/Bradyrhizobium japonicum*;

Accept Rhizobium spp

 b) Convert atmospheric nitrogen to nitrates used by plants in protein synthesis;

1. a) 220C; *Reject when* **0C***is missing*

b) Low yield since temperature beyond optimum denature enzymes; leading to limited metabolism/growth;

1. Wafted/moved/pushed by the ciliary movements; Slight rhythmic muscular contractions in the oviduct wall;
2. a) sub-lingual;

b) Has water that dissolves nutrients/moisten food; Has mucus that lubricates food for easy swallowing; Has mineral ions that create conducive alkaline pH for amylase; Has salivary amylase/ptyalin that hydrolyze starch/convert/breakdown starch to maltose; *Mark 1st 2*

1. a) Varicose veins; b) Veins (in the lower limbs);
2. a)i) Dd; ii) Dd and dd

b) TGACTTGGCATA;

1. a) Most of the right abdominal is occupied by the liver;

b) Releases aldosterone; that influence the kidney/kidney tubules/loop of Henle to reabsorb more Na+ ions into the blood stream;

1. a) Transmits malaria/malaria parasites/*Plasmodium* spp; yet malaria is a leading global killer; *Reject* ***Causes Malaria***

b) Insecta; c) 3 pairs of legs/6 legs; Body divided into three regions/Has Head, Thorax and Abdomen; Has wings; *Mark 1st 2*

1. a) Gives the embryo enough time to mature; Help the seed overcome harsh environmental conditions;

b) Enhance survival by minimizing competition; Occupy new habitats/colonies;

1. a) Have same embryonic origin/Have pentadactyl arrangement of digits;

b) Divergent;

c) Development of adaptations to survive varied habitats;

1. 100 X 3 bases; = 300 bases;
2. a) Schistosoma haematobium; Schistosoma japonicum; Schistosoma mansoni

b) Freshwater snail/Biomphalaria spp

c) Mag = image length ÷ actual length

 = (12mmx1000ߎm) ÷ 100ߎm;

 = X120;

1. a) i) Glucose

ii) Carbaminohaemoglobin/Hydrogen carbonate ions/dissolved gas; *Accept Bicarbonates*

b) Stimulate production of anti-B antibodies; leading to agglutination/clumping together of erythrocytes/red blood cells from antigen-antibody reaction that may be fatal/lead to death;

1. a) Release ecdysone/molting stimulating hormone; that causes ecdysis/molting;

b) Allows for further growth/development (of the insect);

1. a) Create surface on which grass is pressed on for easy cutting by incisors in the lower jaw;

b) i 0/2 c 1/1 pm 2/3 m 3/3 *Rej Capital letters/Wrong sequence/Wrong denominators and numerators/Absence of the fraction format*

c) Feed on vegetation/cellulose-/fiber-rich material; that require a longer time for processing;

1. A male nucleus fuses with the egg cell nucleus; to form a diploid zygote nucleus;

A male nucleus fuses with the polar nuclei; to for a triploid endosperm nucleus;