**Term 1 - 2023**

**BIOLOGY (231/1)**

**FORM FOUR (4)**

**Time:** $2 Hours$

**MARKING SCHEME**

1. Guttation-Loss of water molecules in liquid form via hydathodes;
2. a) Cardiac sphincter;

b) Secrete ptyalin/salivary amylase that breaks down starch to maltose; Releases alkaline saliva that offers optimum pH for efficient action of amylase;

1. a) Have both alkaline and acidic properties;

b) During Starvation/Extreme hunger;

1. a) Mitochondrion; *Reject plural*

b) Name: Crista; *Reject Cristae*

 Importance: Increase surface for attachment of more respiratory enzymes;

1. a) Declines; since high temperature beyond optimum denature/destroy enzymes;

b) This is the optimum temperature thus maximum activation of enzymes;

1. a)i) Enzyme: Thromboplastin/Thrombokinase/Thrombin;

b) Forms a clot that offers a physical barrier against entry of pathogens;

1. a) Lack nuclear membrane;

b)

|  |  |  |
| --- | --- | --- |
| **Feature** | **Insecta** | **Arachnida** |
| Antennae | Have | Lack; |
| Number of legs | 6 or 3 pairs | 8 or 4pairs; |
| Cephalothorax | Lack | Have; |

1. a) The plungers moves outward/away from the gas syringe; since increasing volume of Oxygen formed by the reaction in the flask/breakdown of Hydrogen peroxide;

b) Detoxification/Creates conducive conditions for cell function/metabolism; OWTTE

1. i) Nucleus: To increase surface for packaging more haemoglobin;

ii) Mitochondria: Prevent Oxygen utilization for efficient Oxygen transport;

1. Lack primary producers thus does not generate its own energy; Lack decomposers/Saprophytes thus cannot recycle its nutrients;
2. 1a) Segmented body ………………………………… Go to 2;

1b) Unsegmented body ……………………………… Roundworm;

2a) Has suckers ……………………………………… Tapeworm;

2b) Lack suckers …………………………………….. Earthworm;

1. One male nucleus fuses with the two polar nuclei; to form the endosperm nucleus;

The other male nucleus fuses with the egg cell nucleus; to form the zygote nucleus;

*Reject if Nucleus is lacking after the names given*

1. a) Long curved canine; Has carnassial tooth;

b)



**X**

1. a) Mammalia;

b) Heterodont dentition; Body covered with fur/hair; Has ear pinna/External Ear;

*Mark 1st 2*

1. a) Osmosis;

b) Sugar solution hypertonic to the surrounding; thus gained water molecules by osmosis from the surrounding potato cells and distilled water; thus the level of the solution rose and pushed the pin up to position B;

1. a) Less toxic thus needs less water for excretion leading to conservation of the scarce water in the body;

b) Ammonia is more toxic; Thus requires a lot of water to be excreted;

1. a) Islet of Langerhans;

b) Stimulate the liver cells which break down store glycogen to glucose/fats to glucose/Lower/Inhibit respiration; thus raise level of glucose;

1. a) Diameter of a cell = (3.0mm ÷ 9cells)/1 cell;

= 0,333mm

= 0.333mm x 1000 micrometers;

= 333 micrometers;

b) Prevent breakage of the glass slide; Prevent contamination of the specimen/lens;

1. a) Starch;

b)

|  |  |
| --- | --- |
| **Region** | **Colour** |
| **A** | Brown; |
| **B** | Blue Black; |

c) No chlorophyll; thus no starch formation (via photosynthesis);

1. i) Papain: Meat tenderizer/Softener;

ii) Colchicine: Use in Cancer Therapy; Used in Genetic Research;

1. a) Determine the type of gas produced during photosynthesis;

b) Supply Dissolved Carbon (IV) Oxide; that is a raw material of photosynthesis;

c) Relights a glowing wooden splint;

1. Soluble in water thus easy to be transported to the respiratory sites; Requires less Oxygen for Oxidation/breakdown;
2. a) Increase chance of fertilization;

b) Neutralise the acidic urine in the urethra/female body sercretions;

1. a) Lacks antibodies; thus no agglutination/clumping together of erythrocyres due to antigen-antibody reactions;

b) Screening of blood for pathogens; Screening of blood for blood group compatibility; The blood is not more than a month old; *Mark 1st 2*

1. a) Offer medium for reaction; Soften the seed coat; Hydrolyse stored food; Transport of nutrients to growth sites; *mark 1st 1*

b) Oxidise/Breakdown stored food to release energy; used in cell division/metabolism;

|  |  |  |
| --- | --- | --- |
| **Feature** | **Insect pollinated** | **Wind-pollinated** |
| Size of pollen grain | Smaller | Larger; |
| Length of Filament | Shorter | Longer; |
| Size of petals | Larger/Conspicuous | Smaller/Reduced; |