Term 2 - 2022

BIOLOGY

 (MARKING SCHEME PAPER I )

FORM FOUR

TIME: 2 HOURS

Name: …………………………………………………………. Adm No: ……………….

School: ……………………………………………………….. Class: …………………..

Signature: …………………………………………………….. Date: ……………………

1. a) Manufacture of ribosomes;

b) Monera;

c) Eukaryotes;

1. a) Glycerol; Fatty acids;

b) Requires a lot/more Oxygen to oxidise; Insoluble in water thus not easy to transport to respiratory site;

1. a) Melanin;

b) Influences formation of Vitamin D (in the body); Which is required for absorption of phosphates and calcium ions; important in bone and teeth formation.

1. a) Kidney; b) Liver;
2. a) Process where new off-springs arise without fertilization;

b) Slower/takes longer time to obtain off-springs; Rely on unpredictable pollination/fertilization that are easily affected by weather changes; variation may lead to disadvantageous traits; Relies on the presence of both parents that may be possible in some cases e.g when one dies;

1. a) Has a taproot;

b) Stored nutrients are hydrolysed/converted to simpler forms; that are used in cell division/growth (of the seedling);

1. a) Prevent excessive loss of blood/anaemia; Prevent entry of pathogens into the body; Initiate healing of wound;

b) Convert prothrombin to thrombin; Neutralises anti-clotting factor/Heparin;

1. a) Wind; *Reject* Wind-pollinated

b) Has feather-like stigma; Long filament/Androecium hangs outside; Reduced petals/bracts to expose the gynoecium/androecium to wind;

|  |  |  |
| --- | --- | --- |
| **Feature** | **Cone** | **Rod** |
| Visual acuity | High | Low; |
| Photochemical | Iodopsin | Rhodopsin; |

1. a) Identity: Sensory; *Reject* Unipolar

 Reason : Unipolar; Cell body off the axon;

b) Slow down movement of impulse; to give adequate time for interpretation of the impulse (by brain/CNS);

1. High level of intelligence/Reasoning/Brain capacity; Well-developed speech/effective communication abilities; Upright gait to see far/danger easily; Bipedal locomotion frees hands for other uses; pre-hensile hands for handling various tools; non-opposable toe for stability; 1st 3
2. a) Baking/Manufacture of bread; Brewing Alcoholic beverages; Manufacture of high nutritional value proteins/Single Cell Protein; Manufacture of biofuel/gasohol; Food flavouring; Food conditioning/Preservation; Making vitamin supplements; Ripening of cheese; Food spoilage; *Mark 1st2*

b) i) Respiratory enzymes are inactivated;

 ii) Bind to the enzymes permanently or temporarily thus inhibit enzyme action on substrates;

1. Development of new tools/techniques/procedures for biological research; Development of materials for medicine/agriculture/health/industries

*Accept specific examples* e.g Drugs/Medicine/Hormones/Vaccine/Cultivars

|  |  |
| --- | --- |
| **Continuous Variation** | **Discontinuous Variation** |
| Determined by interaction of many genes | Determined by one or two genes; |
| Determined by interaction between genes and the environment | Determined by the genes alone; |
| Has intermediate traits between two extremes | Lack intermediates/Has distinct groups; |

*Mark 1st 2*

b) Organisms with disadvantageous variations are eliminated; those with advantageous variations adapt, survive (and reproduce); accumulation of such variations over time may lead to speciation/emergence of a new species;

1. a) A group of organisms that are structurally similar and freely interbreed to give rise to a fertile/viable offspring;

b) Came up with binomial nomenclature; Pioneered Modern/Natural classification/taxonomy;

1. d

9cells measure 3.0mm

Therefore 1cell will measure: (1cell x 3.0mm)/9cells = 0.333mm;

1mm = 1000micrometers

 Thus 0.333mm = (0.333mm x 1000micrometers)/1mm;

 Diameter of a cell = 333micrometers;

 b) Viewing of images is indirect/on screen;

1. a) Germinating seeds utilized Oxygen in respiration; the released Carbon (IV) oxide was absorbed by Potassium hydroxide solution; (Thus reduces volume of air in the tube and level of coloured liquid rises)

b) To preserve/Prevent decomposition/Anaerobic respiration;

1. a) Neural spine; *Reject* Spine alone

b) Create vertebral column flexibility; Absorb shock; Reduce friction/rubbing together of the adjacent vertebrae; *Mark* 1st 2

1. a) Has numerous mitochondria to generate a lot of energy; for translocation of substances in the phloem;

Large cytoplasm to store a lot of nutrients; used in respiration to supply energy for translocation;

b) Release myelin sheath; which insulates the axon;

1. a) Erythroblastosis foetalis/Haemolytic disease of the newborn;

b) Arises when a Rhesus negative mother carries a subsequent Rhesus positive foetus’ pregnancy; particles of foetal erythrocytes pass to the mothers blood leading to formation and accumulation of anti-Rhesus antibodies; which pass to the foetus via placenta causing antibody-antigen reaction that destroy the foetal erythrocytes;

1. ai) *Nitrobacter* sp; *Nitrococcus* sp

 ii) Nitrates;

b) Low growth; due to loss of soil fertility/Nitrates important in protein synthesis;

1. i) Hypothalamus; ii) Cerebrum; iii) Medulla oblongata;
2. a) No further increase in rate of reaction/Constant; Since other factors were limiting;

b) i) Carbon (IV) Oxide; ii) Fibrinogen;

1. Tail power = {(300mm - 200mm)/300mm} x 100;

= 33.3%;