**MWAKICAN TERM 1 2016**

**BIOLOGY P1 231/1-FORM 3**

**MARKING SCHEME**

1(a) Cell wall, chloroplast, large vacuole

(b) Riboromes

2(a)(i) Loses water by osmosis and become plasmolysed

(ii) Gain water by osmosis and become turgid

(b)(i) Loses water by osmosis and become crenated

(ii) Gain water by osmosis and becomes haemolysed

3(i) Sweep nets

(ii) Pooter

4(a) Indica \_\_\_\_ species

Mangifera \_ Genus

(b) Binomial Nomenclature/

Cell Modification

5(i) Root hair cell \_\_\_\_\_ Have elongated surfaces to increase the surface area for diffusion

(ii) Palisade cell \_\_\_\_\_ Have numerous chloroplast with chlorophyll for trapping light energy.

(Any other specialized plant cell)

6(a) Resolution/resolving power

(b)(i) Diaphragm \_\_\_ regulates the amount of light passing through the condenser.

(ii) Condenser \_\_\_\_ Concentrates light on the object on the stage

7(a) Light reaction \_\_\_\_ Granum/Grana

Dark reaction \_\_\_ Stroma

(b) The light stage is light dependent. It takes place in the grana of the chloroplast. Light trapped is used to split water molecules into hydrogen ions and oxygen, i.e. photolysis. Energy is formed and is stored in form of ATP.

8(A) In the stomach there is acidic medium due to pressure of hydrochloric acid\9hcl) and ptyalin only acts in slightly alkaline medium hence its denatured or destroyed by a low pH.

(b) High temperature above 40oC

Altering pH Medium

(c) Villi; microvilli

It is long and highly coiled.

9(a) Production of antibodies by lymphocytes.

(i) White blood cells or phagocytes engulfing foreign bodies.

(b)(i) Veins have valves

(ii) Oxyhaemoglobin

10(a) Thin walled due to absence of cuticle to allow reduced distance of water and mineral salts /increases the rate of diffusion of molecules.

* Are elongated in order to increase surface area for absorption of water and mineral salts.
* Presence of a large vacuole with dissolved solute to increase osmotic pressure between cell sap and water in the soil
* Has numerous mitochondria to provide energy which allow uptake of ions by active transport

(b)(i) Xylem

(ii) phloem tissues

11(a) A \_\_\_ Gill bar

B\_\_\_Gill filaments.

C \_\_\_\_ Gill rakers

(b) Gill rakers prevents food and other solid materials from reaching the filaments.

12(a) During aerobic respiration, glucose is completely oxidized to carbon(IV) oxide and water with the release of large amounts of energy.

During anaerobic respiration, glucose is partially oxidized to lactic acid. This releases only part of the energy present in the glucose molecule with the rest remaining locked up in the bonds of the lactic acid molecule.

(b) During aerobic respiration, food substances are broken down in the presence of oxygen. While in anaerobic respiration food substances are broken in the absence of oxygen.

13(a) Animals form waste products more rapidly than plants/produce more metabolic wastes.

Animals do not re-use their wastes while plants re-use some of their wastes.

(b) When the temperature is high, arterioles dilate. When the temperature is low the arterioles construct

14(a) These are special premolars in the lower and upper jaws of carnivores modified with smooth sides and sharp edges to slice through flesh and crush bones.

(b)(i) 3 x 2 = 6 premolars

(ii) Herbivorous, because it has molars, incisors and premolars, but no canines.

15(i) The hypothalamus is the osmoregulatory centre in the brain it is sensitive to any slight changes in the osmotic pressure. It responds by sending impulses to the pituitary gland.

(ii) The pituitary gland secretes antidiuretic hormone (ADH), which stimulates the kidneys to reabsorb water into the blood to maintain normal osmotic pressure.

(b) Diabetes mellitus is a disease caused by a deficiency of insulin/failure of the pancreas to secrete insulin

16.(a) stomata, lenticels, root hairs, cuticle

(b) Tracheoles.

17(a) \_\_\_\_\_ surface area to volume ratio

\_\_\_\_\_ thickness of a membrane

\_\_\_\_\_ concentration gradient

\_\_\_\_\_ size of the molecule

\_\_\_\_\_\_ temperature

(Any three)

**(b)** Cell membrane

18(a) Magnification =

(b Staining is adding a dye(stain) to the specimen to make the features contrast and distinguishable or make some structures more distinct.

19(a)

|  |  |
| --- | --- |
| Chilopoda | Diplopoda |
| 1. A pair of walking legs per segment | 1. 2 pairs of walking leg per segment |
| 2. Body is dorsoventrally flattened | 2. Body cylindrical in shape |
| 3. Body divided into head and trunk | 3. Body divided into head thorax and trunk |
| 4. Has poisonous claws | 4. lacks poisonous claws |
| 5. Have long antennae | 5. Have short antennae |

( Any three)

(b) Class

20(a)(i) Fruit fly

(ii) It belongs to the phylum arthropoda while the others belong to the phylum chordata

(b) Red fox

Both the wolf and the red fox belong to the same family

(c) Tiger

It belongs to the same genus as the lion while all the others belong to different genera.

21(a) Due to stiff competition of resources leading to elimination/exclusion of one species

(b) A community consists of all living organisms of different species in a habitat interacting with each other while a population consists of organisms of a given species in a given area over a given period of time.

22(a) Interspecific competition – competition between individuals of different species

Intraspecific competition - completion between individuals of the same species.

(b) Carrying capacity - maximum number of organisms an area can comfortably support without depletion of available resources.

Biomass – the total constant dry weight of organisms at a particular trophic level.

(c)(i) Photometer or photographic light meter.

(i) Barometer.