

231/1 BIOLOGY (2017)
PAPER 1 (Theory)

MARKING SCHEME

1. (a) - Has two bones, one with round head and the other with cavity where head fit
 - allows movement in all directions i.e rotates through 360o
 (b)(i) Atlas
 (ii) Axis.
2. a)
 Length of a cell= diameter of field of view
 Number of cells;
 6000
 55 ;
 109;
- b) i) **Objective lens.**
 Magnification (of images); owtte
 ii) **Diaphragm.**
 Regulation of a mount of light (falling on the object/specimen on microscope);
3. a) **Pooter.**
 Sucking small organisms from rock and bark surfaces;
 b) **Pitfall trap.**
 Trapping crawling organisms;
4. (a) Transfer of reagents in drops during biology tests
 (b) Iodine solution
5. i) Acidic (The) pH is unsuitable/ Denatured by hydrochloric Acid in the stomach.
 ii) Microscopic (fingerlike) structures responsible for increasing surface area for absorption
 iii) High temperature denature (proteins) Enzymes
6. a) (i) Juvenile hormone
 (ii) Ecdysone / moulting hormone
 b) Prothoracic gland
 c) Instar
- 7a Mongoose
 Snakes
 Insects
 Green plants;
- (b) -Progressive decrease in number of individuals at each trophic level;
 -Increase in animal size at each successive trophic level;
 -Decrease in amount of energy at each successive trophic level/decrease in biomass (1st two)
 (c) Snakes;

8. a) Cell membrane
 b) Enclose or protect cell contents
 Allow selective passage of substances in and out of the cell
9. a) Ultra filtration;
 b) Selective re-absorption;
 c) Proteins have large molecular weights hence not ultra-filtrated
- 10 (a)(i) Dicotyledonae;
 (ii) Star shaped xylem/phloem between the arms o the xylem;
 (b) -Lignified walls to prevent it from collapsing/keep it hollow open throughout:
 - Hollow/Lack cross walls for continuous flow of water and mineral salts any 1
 - Narrow Lumen to enhance capillarity;
11. (a) – Protease;
 - Lipase
 (b) At 35°C optimum temperature for enzyme to act; at 15°C enzymes in active since temperature is low;
12. a) Peristalsis;
 b) Circular and longitudinal muscles on the wall of oesophagus and intestines contract alternately;
 c) Roughage;
13. (i) Will lose water by osmosis and become plasmolysed;
 (ii) It will gain water by osmosis and become turgid.
14. (a) C-A-G-U-C-A ;
 (b) G-T-C-A-G-T;
 (c) – Stones genetic information (in a coded form);
 - enables transfer of genetic information unchanged to daughter cells through replication);
 - Translates genetic information into characteristic of an organism 9through protein synthesis);
 (*Any two functions*)
15. a)Glucosewater + carbon(iv) oxide + energy/210kj
 Or
 $C_6H_{12}O_6 + H_2O + CO_2 + ATP$ (energy) (mark as a whole) 1mk
 b) - Making of beer/Brewing/Ethanol/alcohol;
 - Baking industry/Raising of the dough:
16. (a) Fungi
 (b) Sporangium
 (c) - Mushrooms used as food;
 - Penicillium is used to make antibiotic;
 - Yeast is used in brewing and bread baking

17. **Sub-division** – Angiospermaphyta;

Class – Dicotyledonae;

18. (a) Chiasma; reject – chiasmata

- (b) (i) Provide a chance for the exchange of genes (along the portion of chromosome);
(ii) Meiosis;

19. Camouflage is concealing the identity of an organism by resembling the colour of the environment while mimicry is the imitation of living and non- living organisms to conceal identity.

20. (a) taxonomy is the classification of living organisms on their similarities and difference observed

- (b) (i) Rattus norvegicus (1mk) (Generic name MUST begin with capital letter and be underlined Separately)
(ii) Generic – Rattus;
Specific – norvegicus;

21. a) A – Has umbilical vein and artery to supply foetus with nutrients and removal of waste products;

B – Protects embryo from shock/regulate temperature of developing embryo/ suspends and supports embryo;

b) Foetus head is turned towards the cervix;

c) To supplement iron in the mother since it (iron) is needed for haemoglobin formation in the foetus;

22. (a) Positive phototropism; reject phototropism only

- (b) Positive geotropism; reject geotropism only
(c) Thigmotropism

23. (a) Due to the difference in atmospheric pressure and the pressure inside the ear;

- (b) Swallowing; yawning; opening the mouth.

24 a) Oxyhaemoglobin

- b) Form carboxyhaemoglobin that is stable/ does not dissociate; reducing efficiency of haemoglobin in carrying oxygen leading to death; Reject; death alone
c) The process of photosynthesis release sufficient oxygen for respiration.

25. (a) the rubber balloon expands.

- (b) (i) Trachea.
(ii) Diaphragm.

26. 60 chromosomes