

FORM TWO

BIOLOGY

Paper - 231

October / November 2016

Marking Scheme

1. a) Cytology.
b) Morphology
2. a) Destroy worn out organelles and worn out cells.
b) Package and transport of glycoproteins.
 - Secretion of synthesised proteins and carbohydrates.
 - formation of lysosomes.
3. a) i) Root hair cell.
ii) A - cell wall;
C - cell sap or sap vacuole;
b) controls the functioning of the cell or controls the cell activities.
4. a) It is a system in which blood passes only once through the heart to complete its circuit in the body;
b) Fish, earthworm.
5. i) The genus name written in capital letters.
ii) Musica domestica
- 6.a) Guard cells;
b)- They have chloroplasts which act as sites for photosynthesis;
 - the outer wall is thin while the inner wall is thick and inelastic enable it control size of stomata.
c) Photosynthetic theory;
 - Starch-sugar interconversion theory;
 - potassium ion theory.
- 7.a) Water level in peeled potato cavity rose;
b) Water was hypotonic to cell sap of adjacent cells of potato; these cells absorb water through osmosis; cell sap became less conc. than those of next cell; the process was repeated until water reached to the cavity;
- 8.a) Herbivorous
 - Presence of horny pad
 - Presence of diastema;
b) Upper jaw $(3 + 2) \times 2 = 10$
lower jaw $(4 + 3 + 3) \times 2 = 20$
Total No of teeth = 30
9. a) leaf x
b) X has fewer stomata; most stomata in leaf X are concentrated on the lower side, hence not in direct contact with sunlight that raises transpiration.
10. a) System of naming organisms by giving them two scientific name; generic and specific names.
b) It makes it easy to identify organisms;
 - It is easier to describe organisms based on characteristics of the organisms;
 - for easier study of the organisms;
11. a) Condensation
Hydrolysis;
b) Sucrose;
c) Glycosidic bond;
12. a) i) Prothrombin;
ii) Vitamin K;
b) Red blood cells have a short lifespan of about

120days; hence they might be dead;

13. Cell size = $\frac{\text{Diameter of the field of view}}{\text{total number of cells}}$

Field of view / mm = 1000 μ m

$3.5 \times 1000 = 3500\mu\text{m}$

$\frac{3500\mu\text{m}}{8 \text{ cells}}$

= 437 μ m

14. i) A - Afferent arteriole;

D - Bowman's capsule;

ii) Ultra filtration ;

15. a) i) Ethanol, carbon IV oxide and energy;

ii) Lactic acid and energy;

b) Amount of oxygen required to get rid of lactic acid which accumulates in the body when oxygen supply is less than demand.

16. a) Hepatic portal vein;

B - Hepatic vein;

b) i) A;

ii) B;

17.- Availability of glucose;

- Availability of oxygen;

- Presence of protein carriers;

18.- Have thick muscular and inelastic wall to withstand the pressure due to blood flow;

- Have no valve allows blood to flow uninterrupted;

- Have narrow lumen;

19. i) Glucose

ii) Starch;

b) Palisade mesophyll.

- Spongy mesophyll

20. Haemolymph does not have a transport pigment ; for the gases so oxygen and carbon (IV) oxide moves along the tracheal system;

21. a) Lenticels;

b) Pneumatophores;

c) Stomata;

ii) Hydrogen carbonate ions;
Carbonic acid;

22. a) K - cuticle spiral / ring
L - tracheole;

b) Prevent the trachea wall from collapsing inwards;

23 a) Bordetella pertussis;

b) Streptococcus pneumoniae;

Rej- If genus start will small letter.

- Two names not underlined separately.

24. Body size;

Sex;

Age;

Activities;

Basal metabolic rate;

25. a) Pleural

K - membranes;

L - Alveolus;

M - Intercostal muscles;

b)- Has C- shaped cartilage rings that support it preventing it from collapsing and allow free flow of air;

- Inner lining has secretory cells that produce mucus which traps fine dust particles and micro-organisms.

- Inner lining has hair like structure called cilia that enhance upward movement of the mucus and trapped materials to the pharynx;

c) Diffusion.

26.a) Process by which living organisms separate waste products and eliminate them from their body;

- b) Removal of undigestible and indigestible materials from the body of organisms;
- c) Self adjusting mechanism that functions to maintain a steady state of their internal environment.

27. Animals form waste products move rapidly than plants / produce more metabolic wastes;

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

28.

- Inner membrane is highly folded to form cristae which provide a large surface area for attachment of respiratory enzymes.
- Presence of respiratory enzymes to catalyse the rate of reactions in the matrix;

b) Baking : brewing of beer, wine, formation of daily products; formation of organic compounds.

29. Rickets or osteoporosis;

a) Goitre;

- b)- Long to provide large surface area for absorption and digestion of food;
- Narrow to bring digested food into close contact with walls of ileum for absorption.
- Highly folded to slow down food movement.
- Inner surface has large number of villi and microvilli increase surface area.

30. a) Are lignified or thickened to prevent collapsing.

- Have long and narrow lumen to facilitate capillarity.
- made of dead cells to ensure passage of water.

b) A, B, AB, O; rej if all blood groups are not stated.

31. a) Canine;

- b)- Pointed / sharp for piercing /tearing / cutting flesh;
- Has long root to support it into the jaw bone;