30.4 BIOLOGY (231)

30.4.1 Biology Paper 1 (231/1)

1. (a) Cytology;
   (b) Microbiology; (2 marks)

2. (a) Stem;
   (b) (i) Monocotyledonae;
   (ii) Vascular bundles scattered/not arranged in a ring
   (c) Epidermis; (4 marks)

3. (a) Protein synthesis
   (b) Destroys worn out organelles and micro-organism; (2 marks)

4. (a) (i) Root hair cell;
   (ii) D – cell wall;
   E – cellsap vacuole;
   (b) Controls the functioning of the cell; (4 marks)

5. A large surface area for efficient diffusion of gases;
   Moist for gases to diffuse in solution form;
   Thin for efficient diffusion of gases across a short distance; (3 marks)

6. (a) Co-ordinates balance;
   (b) Controls heart beat/blood pressure/breathing rate; (2 marks)

7. Haemolysis – process by which red blood cells take in water till they burst;
   Plasmolysis – loss of water from a plant cell; (2 marks)

8.

Chilopoda	diplopoda
A pair of walking	2 pairs of walking legs
legs per segment;	Per segment;
Body flattened dosoventrally;	Body cylindrical in shape;
Body divided into head and trunk	Body divided into head thorax and trunk;

(3 marks)

9. They contain chlorophyll which traps light energy;
   They have grana which increase surface area for photosynthesis;
   The stroma has enzymes for photosynthesis;
   Any two (2 marks)

10. Resistance to diseases;
    Increased yields; (2 marks)

11. (a) Aquatic; (1 mark)
    (b) Large air space/aerenchyma to enhance transpiration;
    Sclereids for mechanical support of leaf;
    Stomata on upper epidermis to enhance transpiration;
    Any two (2 marks)

12. J – Sporangium;
Absorption of soluble substances;
Secretion of digestive enzymes; (3 marks)

13. (a) Place or environment in which specified organisms live;

(b) A natural unit with abiotic and biotic factors; (2 marks)

14. Charcoal in limited supply of air produces carbon (ii) oxide; which combines with haemoglobin forming carboxyhaemoglobin;
Leading to suffocation/death; (3 marks)

15. **X** – Starch present;
Y – Starch absent;
X – Acts as a control; **Y** – CO_2 absent absorbed by potassium hydroxide pellets;

16. Emulsification;
Creating alkaline medium for digestive enzymes; (2 marks)

17. (a) Herbivorous;

(b) Lack canines on upper Jaw/lack incisors on upper jaws; (1 mark)

18. Animals form water products more rapidly than plants;
Animal wastes are more toxic than those of plants;
Animals don't re-use their wastes while plants re-use some of their wastes;
Any two (2 marks)

19. When temperature is high they dilate; when low they constrict; (2 marks)

20. Higher chances of fertilization;
Embryo is protected from external environmental conditions; (2 marks)

21. (a) P – sutures;

(b) (i) Atlas;
(ii) Hinge joint; (3 marks)

22. (a) Passage of ova;

(b) Storage of sperms;

(c) Hold the testis; (3 marks)

23. Absence of nucleus; increase of space for packaging haemoglobin for carrying oxygen.
Possession of haemoglobin which has high affinity for oxygen;
Concave shape creates large surface area for combining with oxygen;
Ability to change shape to enable them pass through capillaries (3 marks)

24. (a) Use and disuse;
Acquired traits can be passed on to offspring;

(b) Acquired characteristics cannot be inherited; (3 marks)

25. Overcrowding;
Accumulation of toxic wastes;
Limited resources such as nutrients; (3 marks)

26. (a) Provides support;
Enables plants to grow towards light; Any one

(b) In search of nutrients
Anchorage; Any one (2 marks)

27. (a) Failure of homologous chromosomes to segregate during meiosis;

(b) (i) Down's syndrome/Turner's syndrome/Klinefelter's syndrome; (1mark)

(ii) Albinism/single cell anaemia/haemophilia/colour blindness; (1 mark)

28. Arteries have thick muscular walls, veins have thin and less muscular walls;
Arteries have narrow lumen, veins have wider lumen;
Arteries have no valves except at junction with heart veins have valves at regular intervals; (3 marks)

29. (a) Gymnospermae;

(b) Needle-like leaves (with waxy cuticle);
Naked seeds; (3 marks)

30. The inhibition of growth of lateral buds;
By auxins; produced by the growing apical bud; (3 marks)

28.4.2 Biology Paper 2 (231/2)

1. (a) Respiration; (1 mark)

(b) (i) Increase/rise in thermometer reading/temperature; (1 mark)

(ii) Carbohydrates/starch/glucose in germinating seeds is broken down/oxidised to get energy; some of the energy is released as heat;
(which increases temperature reading). (2 marks

(c) To kill bacteria/fungi/microorganisms; that would cause decay/decomposition/respiration of the beans; (2 marks)

(d) To conserve heat/prevent heat loss to surroundings; (1 mark)

(e) Use similar set-up but with dead and disinfected beans seeds/ use dead disinfected bean seeds/use dry bean seeds; (1 Mark)

2. (a) P Tissue fluid/intercellular/interstitial fluid/space; (1 Mark)
Q Venule; (1 Mark)

(b) (i) Glucose, oxygen; (1 Mark)

(ii) Carbon (iv) Oxide, water; (1 Mark)