

4.4 BIOLOGY (231)

4.4.1 Biology Paper 1 (231/1)

- 1.(a) Is when the rate of water loss is more than the rate of absorption and the plant droops; 1 mark
- (b) The rate of active transport increases with increase in temperature up to the optimum temperature; 1 mark
- Further increase in temperature slows down the rate of active transport until it stops because it denatures enzymes; 1 mark
- 2.(a) Animal cell; 1 mark
- (b) - Has cell membrane only/has no cell wall;
- Has numerous small vacuoles;
- Has central nucleus; Max. 2 marks
- (c) Consists of many similar cells performing the same function; 1 mark
- 3.(a) Have mammary glands; have external ears/pinna;
Body covered with fur/hair; Max. 2 marks
- (b) Class; 1 mark
- 4.(a) Lubrication; Protection; 2 marks
- (b) Young people are more active; requiring more energy;/
Older people are less active; requiring less energy; 2 marks
5. As the cell gains water by osmosis; the sap/cell vacuole enlarges; pushing the cytoplasm outwards; exerting pressure on the cell wall; Any 3 3 marks
6. $\frac{6000(\mu\text{m})}{55 \text{ (cells)}} ; 109\mu\text{m};$ 2 marks
- 7.(a) Water molecules cling to each other maintaining a continuous column of water/preventing the break of water column; 1 mark
- (b) Water molecules cling to the sides of the xylem vessel walls; 1 mark
8. 1(a) - Leaf with serrated margin -- go to 2;
(b) - Leaf with smooth margin -- go to --; 2 marks
9. Presence of myelin sheath for insulation/increases transmission; Axon for transmission of impulses;
Large cell body controls activities of cell; Nerve endings/dendrites receive impulses from

receptors cells;
Node of Ranvier speeds up impulse transmission.

- (b) Inner membrane highly folded/cristae to increase S A for attachment of (respiratory) enzymes. 4 marks
10. Cells loosely arranged; to facilitate air circulation;
Cells have moist surfaces; to dissolve respiratory gases; 2 marks
11. Can receive blood from any donor/ universal recipient; 1 mark
12. (a) (i) Arachnida; 1 mark
(ii) Spider/scorpion/tick/mite; 1 mark
- (b) Protoctista/protista; 1 mark
13. Autotrophic nutrition; show alternation of generation;
Limited movement;
Limited excretory products/unspecialized respiratory structures;
Localised growth; 2 marks
14. Alcohol/ethanol; Carbon (IV) oxide; Energy/Adenosine Triphosphate; 3 marks
15. - To increase supply of oxygen to the tissues;
- The oxygen is used to oxidize lactic acid (to carbon (IV) oxide, water and energy); 2 marks
16. Protogyny; protandry; Dioecious; Dichogamy;
Self sterility/incompatibility; Heterostyly;
Presence of structures/substances to attract agents of pollination; Max. 3 marks
17. Ovary /Anther; 1 mark
18. - Acrosome/Lysosome contain enzyme to digest membrane of the ovum;
- Numerous mitochondria to provide energy for movement;
- Long tail for faster movement; Max. 2 marks
19. - Embryo not fully developed;
- Chemical inhibitors/presence of abscisic acid;
- Hard/impermeable testa/seed coat;
- Low hormones/low enzymes concentration; Max. 3 marks
20. Genetically acquired beneficial characteristics which occur spontaneously; are perpetuated through reproduction; 2 marks
- 21.(a) Continents existed as one large Landmass/Pangea/Laurasian and Gondwana Land;
Present continents drifted from it leading to isolation of organisms; organisms in each continent evolved along different lines hence emergence of new species; 3 marks

- (b) Emergence of new life/species/organisms from pre-existing simple forms, gradually over a long period of time, to present complex forms; 1 mark
- 22.(a) Thigmotropism/Haptotropism; 1 mark
- (b) Part of the tendril in contact with support causes migration of auxins to the opposite side; leading to faster cell division/growth on the side not in contact with the support; This causes the tendril to curl around the support; 3 marks
23. Use of biconcave/concave lens/divergent lens; to diverge the rays and make image be focussed on the retina; 2 marks
24. - Contains antibodies that defend the body from foreign antigens;
- Has white blood cells that produce antibodies/while blood cells engulf antigens;
- Has platelets that initiate blood clotting to prevent excessive bleeding at an open wound/ prevent entry of pathogens; 3 marks
25. - Thin and long to allow for capillarity;
- Walls lignified to strengthen the stem/to prevent collapse of vessels;
- Have bordered pits to allow for exchange of materials; Max. 2 marks
- 26.(a) Genes inherited along with the sex chromosomes; 1 mark
- (b) Haemophilia; hairy ears/pinna/nose; colour blindness/red green; blue-green colour blindness; Muscular diastrophy; baldness 2 marks
- 27.(a) Complete metamorphosis - eggs hatch into larvae while in incomplete metamorphosis hatch into nymphs which resemble the adult; Complete metamorphosis has four stages; egg, larvae, pupa and adult while an incomplete metamorphosis has three stages; egg, nymph and adult. 2 marks
- (b) To allow for growth of the insect; 1 mark
28. (a) Ligaments; synovial fluid; synovial membrane; articular cartilage; synovial capsule; a bone with rounded head fitting into a cavity of another bone; Max. 2 marks
- (b) (i) Atlas; (ii) Axis allows movement in all planes; 2 marks
29. - Form joints with the legs to make walking possible; 1 mark
- Provide large surface area for attachment of muscles; 1 mark
- Offers support (to the body weight)
30. Absorption of water; support; Opening and closing of stomata; Feeding in insectivorous/plants; 2 marks