**30.4 BIOLOGY (231)**

**30.4.1 Biology Paper 1 (231/1)**

1. (a) Xylem.

 (b) Phloem.

 (c) Apical meristem. ***(3 marks)***

2. (a) ***Ultrafiltration***:- to remove toxic/ harmful substances/urea/nitrogenous waste from the blood stream.

(b) ***Selective reabsorption***:- to return useful substances/glucose and amino acids back into the blood stream. ***(2 marks)***

3. (a) Hepatitis B.

 (b) (i) Vibrio cholera.

 (ii) Candida vaginalis/albicans/vaginitis. ***(3 marks)***

4. (a) The red blood cell was placed in a hypertonic solution; it lost water by osmosis;

 and became crenated. ***(2 marks)***

5. (a)

* + - Temperature; pH; co-factors; co-enzyme; substrate concentration
		- Cell wall inhibitors; enzyme concentration; product concentration. ***(2 marks)***

6. (a) Failure of homologous/sister chromatids to segregate during meiosis.

 (b) Height; weight/mass; length of toe/finger. ***(3 marks)***

7. (a) Preserved remains of dead organisms that lived in ancient times.

(b) Convergent evolution occurs when two dissimilar species/structures/organisms of different embryonic origin change in response to similar environmental conditions and develop similar characteristics/modified to perform similar functions. ***(4 marks)***

8. (a) Anaphase.

(b) (i) Chromatid pairs move towards opposite pole/ends of the cell/sister

 chromatids separate.

 (ii) The spindle apparatus have disappeared/spindle fires have disappeared.

 (iii) Root tip/shoot tip/young leaves. ***(4 marks)***

9.

* Basal metabolic rate (B.M.R); sex.
* Occupation/activity; age; body size. ***(3 marks)***

10. (a) Antigens A; and B/rhesus factors/rhesus antigens/antigen D.

 (b) Pliable/flexible/able to change its shape. ***(3 marks)***

11. (a) The ability of organisms to maintain a stable/constant internal environment.

 (b)

* Breathing mechanism/gaseous exchange.
	+ - Thermoregulation/temperature regulation.
		- Osmoregulation/regulation of water and ions/excretions.
		- Regulation of blood sugar level/glucose; regulation of pH value . ***(4 marks)***

12.

* Transport of protein.
* Transport/systhesis of lipids/steroids.
* Provision of sites of attachment of ribosomes.
* Stores calcium in skeletal muscles.
* Storage of proteins/enzymes/hormones.
* Detoxification of organic materials. ***(2 marks)***

13. (a) Fovea/yellow spot/fovea centralis.

 (b) Image is

* upside down/inverted.
* back to front/reversed.
* smaller than object/diminished.
	+ - real. ***(3 marks)***

14.

* ***Growth***:- increase in numbers/decrease in numbers/change in numbers/growth rate.
* ***Dispersion:-*** spread pr distribution of organisms in a habitat.
* ***Density***:- the number of individuals per unit area. ***(3 marks)***

15. Muscles are subjected to respire anaerobically resulting in accumulation of lactic acid in the tissue; causing fatigue/muscle cramps. ***(2 marks)***

16. (a) Photosynthesis.

 (b)

* Carbon IV oxide (concentration).
* Temperature.
	+ - (Amount) of chlorophyll. ***(2 marks)***

17. (a) ***Lag phase***:- the number of cells dividing are few/the cells have not yet adjusted to the

 surrounding environmental factors.

 (b) ***Plateau phase***:- most cells fully differentiated/few cells are still dividing.

 Rate of cells dividing is equal to rate of cells dying. ***(2 marks)***

18.

* + - Transparent to allow light to penetrate the photosynthetic tissue;
		- Single layer of cells/thin to reduce distance over which light penetrates;
		- Photosynthetic tissue;
		- Presence of stomata for gaseous exchange;
		- Closely fitting cells to protect inner tissue. ***(2 marks)***

19. (a) Cardiac muscle/tissue.

 (b) Contraction of the heart. ***(2 marks)***

20. (a) Circulatory system in which blood passes through two capillary systems before flowing back to the heart/blood passes only once through the heart to complete the circuit.

(b) Earthworm/Leech/Ragworm/fish.

(c) Ostium. ***(3 marks)***

21. (a) A state during which a seed cannot germinate/resting before seed germination.

(b) Abscisic acid. ***(2 marks)***

22.

* Large air spaces.
* Thin cell walls. ***(2 marks)***

23. (a) Canine.

 (b) pointed/sharp for piercing/tearing/cutting food.

 (c) (i) ***C***:- maintenance of healthy cells promotes absorption of iron/prevents scurvy/quick healing of wounds/prevents bleeding of gum/boosts immunity.

1. ***K***:- Participates in clotting of blood. ***(4 marks)***

24.

* ***Light reaction***:- Grana.
* ***Dark reaction***:- Stroma. ***(2 marks)***

25.

* ***Bean plant***:- Dicotyledonae; leaves are net-veined/leaves with petiole/star-shaped xylem with Phloem in between arm of xylem/tap root system.
* ***Bat***:- Mammalia; presence of fur/hair/mammary glands. ***(4 marks)***

26. (a) ***Colchicine***:- Used in inducing polyploidy.

 (b) ***Papain***:- Used as meet tenderizor. ***(2 marks)***

27. (Anaerobic) micro organism/break down harmful substances in sewage. ***(1 mark)***

28. (a) Budding.

(b) (i) ***Protandry***:- stamens/anthers/male parts mature before the carpels/pistil/female parts/Stigma of a flower.

 (ii) ***Protogyny*** :- carpels mature before the stamens of a flower. ***(3 marks)***

29. Cushions foetus against shock/provide a suitable medium for embryo to grow. ***(1 mark)***

30. (a) Pelvic gridle.

 (b) Femur.

 (c) Obturator foramen. ***(3 marks)***