

## 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 fibres have disappeared.  
(iii) Root tip/shoot tip/young leaves. (4 marks)
9. (a)  
▪ 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/synthesis 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 or 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.  
 (ii) **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 meat tenderizer. (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 girdle.  
 (b) Femur.  
 (c) Obturator foramen. (3 marks)

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