

5.2 BIOLOGY (231)

5.2.1 Biology Paper 1 (231/1)



1. Plants make their own food from Carbon (IV) Oxide and water in the presence of light autotrophic/ photosynthesis; while animals eat ready made food from plants or animals/heterotrophic nutrition; (2 marks)

2. (a) Crustaceae/crustacea; (1 mark)
(b) Head fused with thorax/has a cephalothorax;
Have two pairs of antennae;
Have compound eyes/a pair of compound eyes;
Have several pairs of limbs/five to twenty pairs of limbs;
Exoskeleton is hard;
Have external gills;
Four pairs of mouth parts consisting of maxilla, mandible, labium and labrum. (max 3 marks)

3. (a) (i) A - nucleopore; B - Rough Endoplasmic Reticulum; (2 marks)
(b) Surface covered with ribosomes; for protein synthesis;
Has interconnected channels: for transportation of proteins; (2 marks)

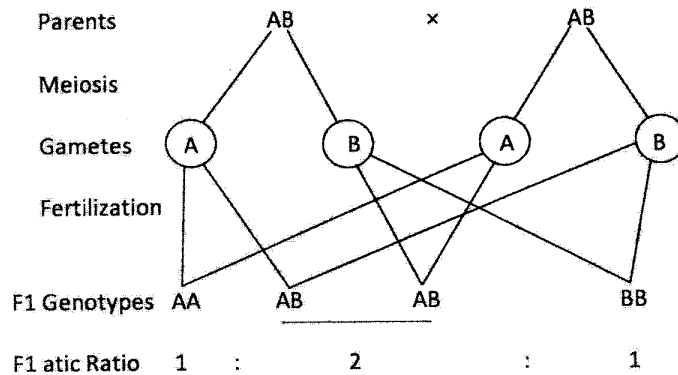
4. (a) The solution was hypotonic/less concentrated compared to the cell sap of pawpaw cylinder cells;
The tissue/cells gained water by osmosis; becoming turgid/longer/stiff; (3 marks)
(b) Pawpaw cylinders of the same size/length; placed in an isotonic solution;
Boiled potato cylinders of the same size; placed in a similar solution; (2 marks)

5. (a) Plant C; (1 mark)
(b) Thick cuticle reduces water loss;
Low number of stomata reduces water loss;
Large root-surface area enhances water absorption; (3 marks)

6. (a) F - Bronchiole;
G - Intercostal muscles/external intercostal muscles; (2 marks)
(b) H - (Pleural membranes) secretes and encloses pleural fluid to lubricate lungs/protect lungs; (1 mark)
J - (Diaphragm) separates chest cavity from abdominal cavity/works to effect volume and pressure changes in chest cavity necessary for inhalation and exhalation/ventilation/breathing; (1 mark)

7. (a) Respiration/aerobic respiration; (1 mark)
- (b) Flask K Potassium hydroxide removes Carbon IV Oxide from atmospheric air; (1 mark)
- (c) L - Lime water remains clear because Carbon (IV) Oxide has been removed;
Flask N lime water forms a white precipitate because the respiring cockroaches produce Carbon (IV) Oxide; (2 marks)

8. Parental genotype is AB



or

♂ \ ♀	A	B
A	AA	AB
B	AB	BB

Probability is $\frac{1}{2}$ or 0.5/50%;

(4 marks)

9. Reduces dehydration; Avoid predators; (max) (1 mark)
10. Ability of an organism to detect, interpret and respond to changes in the environment/stimulus; (1 mark)
11. (a) Can contract continuously without fatigue;
Their contraction is started by the muscles themselves/myogenic; (2 marks)
- (b) stomach: smooth;
bone: skeletal; (2 marks)
12. (a) Fine adjustment knob; (1 mark)
- (b) Avoid refraction of light;
Prevent wetting of the slide; (1 mark)
(max)

13. Temperature; surface area; distance that particles have to travel; diffusion/concentration gradient; size/density of particles; surface area to volume ratio; thickness of membrane; medium of diffusion (3 marks)
14. (a) Aerobic respiration; (1 mark)
(b) It releases more energy per unit mass; (1 mark)
15. (a) Androgens; (1 mark)
16. The plant/flower is self sterile/not successfully self pollinated; covering prevents pollination; in flower P. Flower Q received pollen from other plants/cross pollination; (3 marks)
17. Carbon IV Oxide; Nitrogenous waste/urea; (2 marks)
18. Most of the waste products are harmless;
Converted into harmless products; (1 mark)
19. Passing urine frequently/polyuria; glucose/excess glucose in blood/hyperglycaemia; constant feeling of thirst/dehydration; loss of weight; excessive eating/increased appetite/polyphagia/hyperphagia; poor resistance to diseases; (4 marks)
20. height/length; weight/mass; surface area; (3 marks)
21. Nitrogen fixation; (1 mark)
22. Results in adaptations that enable organisms to exploit different ecological niches; leads to the formation of new species; (2 marks)
23. (a) Cellulose;
(b) Lignin; (2 marks)
24. Small/round; central nucleus/prominent nucleus; dense cytoplasm/protoplasm; no vacuoles; continuously dividing; thin cell walls (4 marks)
25. Ecdysone causes metamorphosis; towards adult stage
Juvenile hormone maintains larval characteristics; (2 marks)
26. (a) Theory of natural selection; (1 mark)
Theory of environmental influence on inherited characteristics; (1 mark)
- (b) (i) Similar organelles performing similar functions in different organisms suggest a common ancestry/cell biology; (1 mark)
(ii) Fossil records/palaeontology/by comparing fossils to show phyllogenetic relationship between organisms/common ancestry; (1 mark)

27. Removes excess water/waste products/Homeostasis; (1 mark)

28.

Open	Closed
<ul style="list-style-type: none">• Blood flows in haemocoel/sinuses/body cavity directly in contact with cells• Blood flows at low pressure• Blood lack pigments	Blood confined in vessels; Blood flows at high pressure; Blood has pigments for oxygen and Carbon (IV) Oxide transportation

(2 marks)

29. Water; mineral ions; vitamins

First two

2 marks

30. (i) Smooth endoplasmic reticulum;

(1 mark)

(ii) Golgi bodies/golgi apparatus.

(1 mark)