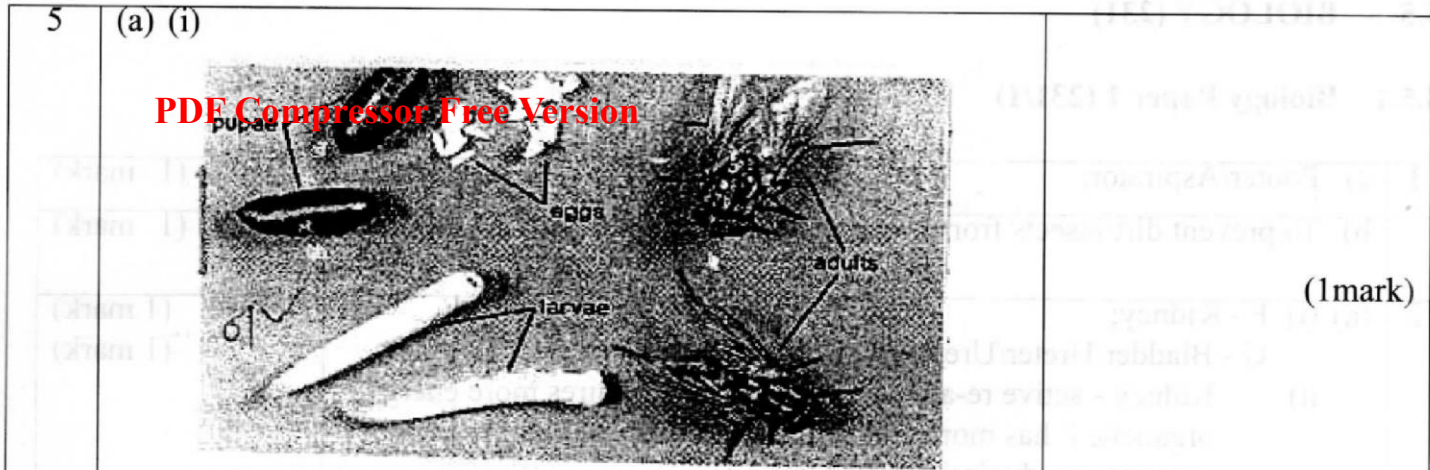


4.5 BIOLOGY (231)

4.5.1 Biology Paper 1 (231/1)

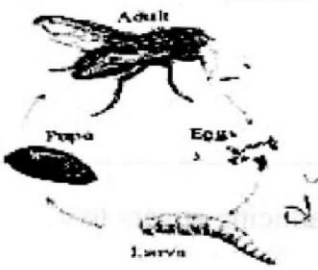
PDF Compressor Free Version

| | | |
|---|--|---------------------------------------|
| 1 | a) Pooter/Aspirator; | (1 mark) |
| | b) To prevent dirt/insects from entering the suction tube/into the mouth; | (1 mark) |
| 2 | (a) (i) F - Kidney; G - Bladder/Ureter/Urethra; ii) Kidney - active re-absorption of solutes requires more energy; organelle F has more cristae for attachment of more respiratory enzymes producing more energy; Bladder/ureter/urethra does not require as much energy/ organelle G has less number of cristae hence fewer respiratory enzymes attached/less energy produced; | (1 mark) (1 mark) (2 marks) |
| | (b) i) Stroma; ii) Grana/granum; | (1 mark) (1 mark) |
| 3 | a) Non reducing sugar; | (1 mark) |
| | b) (i) Hydrolyze/break down sucrose/ non reducing sugars to reducing sugars/glucose/fructose; (ii) neutralize the acid; | (1 mark) (1 mark) |
| 4 | a) $R.Q = \frac{CO_2 \text{ produced}}{O_2 \text{ consumed}}$ $= \frac{199.75}{200}$ $= 0.99875$; | (2 marks) (1 mark) |
| | b) Carbohydrates/glucose; | (2 marks) |
| | c) -Stored in the body as fat/subcutaneous deposit/adipose tissue; -Stored as glycogen (in the liver / muscle cells); -(Increase) oxidation; any 2- | |



(1mark)

(ii)



(1mark)

b (i)

| Housefly | Cockroach |
|---|--|
| <ul style="list-style-type: none"> - Undergo complete metamorphosis/Egg, Larva,Pupa,Adult/has 4 steps; - Eggs have no egg case/ ootheca - Many/numerous eggs | <ul style="list-style-type: none"> - Undergoes incomplete metamorphosis/ Egg,Nymph,Adult/has 3 steps; - Eggs in egg case/ootheca - Fewer eggs |

(2 marks)

2x1

ii) Absence of larva and pupa shortens the life cycle of the organism; (avoiding adverse/extreme environmental conditions that would affect its growth/general life processes);

(1mark)

6 Pepsin (secreted as pepsinogen);
Trypsin (secreted as trypsinogen);
Rennin/chymosin (Secreted as Prorennin/Prochymosin; max-2 (2 marks)

7 Animal - accept correct examples (of organisms)/amoeba/plasmodium;
 Constriction of the cell membrane/ presence of centrioles ; (2 marks)

PDF Compressor Free Version

| | | |
|----|--|--|
| 8 | To increase the supply of oxygen (in the tissues); to offset the "oxygen debt"/halt/manage the accumulation of lactic acid (in the muscles); | (2 marks) |
| 9 | a) Reflects light (through the condenser) to the object; b) - Can break the objective lens/cover slip/slide; - Can destroy the specimen (making the microscope dirty); | (1 mark) Any one correct (1 mark) |
| 10 | a) The diaphragm contracts and flattens; leading to increase in volume of the thoracic cavity; decreasing the pressure inside it, (forcing in the air); b) - Thin leaf lining/epidermis for faster diffusion of respiratory gases/ to reduce diffusion distance for respiratory gases; - Numerous stoma to increase surface area for gaseous exchange; - loosely packed cells in the spongy mesophyll region/ intercellular air spaces (lower layer) to allow for free movement of respiratory gases; | (3 marks) Any 2 (2 marks) |
| 11 | a i) Diffusion; ii) - Gaseous exchange/excretion of carbon (IV) oxide and oxygen; - Translocation of materials; - Absorption/uptake of mineral ions/salts; b. - Lowering the temperature of the medium; - Increasing thickness of the membrane; - Use less dye/add more water/reducing the concentration gradient; | (1 mark) Any 2 (2 marks) (2 marks) |
| 12 | a) Geotropism - enables plants access water/mineral salts; - Anchorage; b) Phototropism- Exposes plant leaves to light for photosynthesis/for formation of chlorophyll; | (2 marks) (1 mark) |
| 13 | <i>Mycobacterium tuberculosis/ Mycobacterium bovis</i> ; | (1 mark) |
| 14 | a. Epigeal; b. G – Elongates to expose the foliage leaves to light photosynthesis H - Stores food (for growth); - For photosynthesis (it is green); - Protects plumule during germination; | (1 mark) Any one (1 mark) |
| 15 | Osmosis; water moves into the cells becoming turgid; attaining mechanical support ; OWTTE | (3 marks) |

| | | |
|----|--|------------------------|
| 16 | a. I – Deletion; II- Inversion; | (1 mark) |
| | b. The characteristics /traits of an organism are determined by internal factors/ genes (which occur in pairs). Only one of the genes can be carried in a gamete/ passed onto the next generation; | (1 mark) |
| | c. <ul style="list-style-type: none"> - Most have lost most of the original (desirable) qualities eg taste; - Poor/undesirable qualities are perpetuated through subsequent generations; - Products' qualities are irreversible- can't get original species/qualities; | Any 2 (2 marks) |
| 17 | <ul style="list-style-type: none"> - Presence of numerous villi/microvilli; - Being long; - Being highly coiled; | Any 2 (2 marks) |
| 18 | a. Comparative embryology; | (1 mark) |
| | b. Fish remained in the aqueous media/ aquatic habitat; well-developed tail/ fin for propulsion/movement; <ul style="list-style-type: none"> -Ability to rationalize / higher thinking capacity/higher brain activity/advanced brain; -Ability to walk on two's/ bipedal modification of the limbs/ opposable thumbs/upright posture; -Communicate through speech; -Have binocular/stereoscope vision; | (2 marks) (2 marks) |
| 19 | a. i) Less water and urea; since some is excreted/eliminated through the skin (as sweat); ii) increased amount of urea in the urine; due to deamination of amino acids (from proteins); | (2 marks) (2 marks) |
| | b. i) ultra filtration; ii) Selective reabsorption; | (1 mark) (1 mark) |
| 20 | i. Petrification/change into rock; ii. Entire organism or parts preserved; iii. Impressions (eg casts/moulds); | (3 marks) |
| 21 | Differences in distribution of chlorophyll/leaf is variegated; green patches would photosynthesize forming starch; giving blue-black colour with iodine solution unlike the regions without chlorophyll; | (3 marks) |

| | | |
|------------------------------------|--|--|
| 22 | <ul style="list-style-type: none"> - Storage in tissues in non-toxic forms; - Deposited in plant tissues/organs- which age and fall off; (eg leaves, bark, fruits, flowers) | (2 marks) |
| PDF Compressor Free Version | | |
| 23 | <p>a.</p> <ul style="list-style-type: none"> i) To investigate how ants respond to moisture/water/ hydrotaxis (varied environments with/without moisture/ water); ii) Silica gel/anhydrous calcium chloride pellets/pyrogallic acid/dehydrating/ drying agent; iii) The colour of cobalt (II) chloride paper remained blue/all the moisture/ water vapour was absorbed/There was no water/moisture in the flask to change the colour of cobalt (II) chloride paper; <p>b. (More) ants were attracted/ moved into the flask; due to the presence of moisture/water vapour; (evidenced by the change of cobalt (II) chloride paper to pink)</p> | <p>(1 mark)</p> <p>(1 mark)</p> <p>(1 mark)</p> <p>(1 mark)</p> <p>(2 marks)</p> |