231/1 BIOLOGY MARKING SCHEME PAPER ONE

1. a) Contributes to magnification of the image and brings it to focus.

   b) Regulates or adjusts or controls the amount of light passing through the condenser to illuminates the specimen.

2. a) Sucking small insects/ small animal from rocks surfaces and barks of trees.

   b) A trap into which small crawling animal (e.g) insects, amphibians, reptiles, arachnid) fall and get trapped.

3. a) 30
   b) i) Herbivorous.

   ii) Lack upper incisors.

   Lack canines (any one answer)

   acc; diastema presence, for lack of canines.

4. a) i) Rib cage / chest cavity.
   ii) Diaphragm.

   b) Lungs inflate or expand i.e ballons are inflated.

   c) The volume of D increases and presence decreases when you pull down the string.
   External atmospheric pressure being higher forces air to enter the balloons and they inflates.

5. a) Respiratory Quotient = $\frac{\text{carbon (iv) oxide produced}}{\text{Oxygen consumed}\surd}$

   $= \frac{102}{145} = 0.7$ (1mk)

   b) Lipids/ fats / oils.

6. a) Femur.
   b) Ball and socket.

7. When they are capable of interbreeding ; to produce a viable /fertile off-springs;

8. a) positive phototropism.
   b) Light causes lateral migration of Auxins hormones/ they (hormone)move or diffuse to the dark side away from the light side; causing elongation or more growth on the dark sides hence bending / a curvature towards light;.

9. a)

DNA	**RNA**
Has two strands	Has one strand.
Has nitrogenous base thymine	Has nitrogenous base uracil.
Has five – carbon sugar Known as deoxyribose	Has three carbon sugar known as ribose.

   b) – Stores genetic information (in coded form)
   - Enables transfer of genetic information (un changed) to daughter cells(through replication.
   - Translate genetic information to characteristics of organism(through protein synthesis)
   Any two

10. For shelter; food, oxygen, removal of carbon (iv) oxide, breeding site (***any two)***

11. a) Structures that has become functionless / ceased to be functional over along period of time.

    i) Appendix
    Coccyx/ caudal vertebrae.

    b) Divergent evolution. Rej, Homologous structure
    Convergent evolution . Rej. Analogous structure.

12. Osmoregulation /osmotic pressure regulation.
    Thermoregulation/ temperature regulation.
    Ionic balance.
    Blood sugar regulation.
    Any two)

13. a) i) All the glucose are actively reabsorbed in the blood stream.
    ii) plasma protein have large molecules size hence not filtered through small poles of the capillary walls and the glomerulus walls.

b) Aldosterone.

14. a) Anchorage/ holding plants firmly in soil.
Absorption / uptake of mineral salts and water
storage roots - Store water and food.

Modified rots of breathing roots for gaseous exchange.
(any two)

b) - Replace water lost through the leaves.
- Enables mineral salts and water to be transported within the plant.
- Cools the plant.
- Removal of excess water in aquatic plants.
- Responsible for support through turgor pressure.
(any two)

15. a) Visking tubing will become swollen / bigger or increased in size.
b) Sucrose solution is hypertonic compared to the water in the beaker(or water is hypotonic compared to sucrose in the beaker); water moves from the beaker into visking tubing by osmosis through semi permeable visking tubing; making visking tubing swell or increase in size.

16. i) Anaphase I

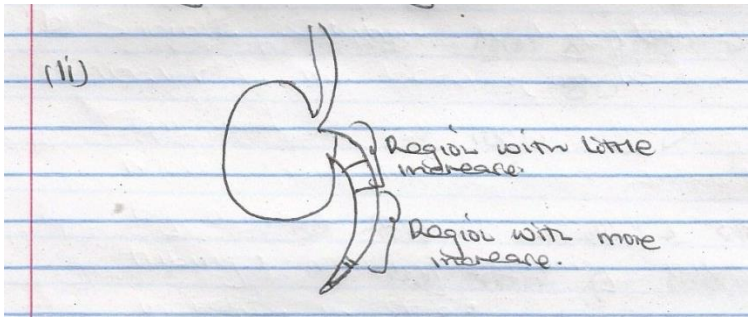
ii) Homologous chromosomes separates at the equator.
Chromosomes start migrating to opposites poles.
Sister chromatids attached at the centromere.
(***any two)***

17. i) Expose the surface area of leaf to sun-light and carbon (iv) oxide for photosynthesis.
Ensure flowers are exposed to pollination.
Expose fruits/ seeds for dispersal.
To resist breakage(due to their own weight and of other organism.
(any two.)

ii) Provide surface for attachment of body organ/muscles to facilitate movement .
To protect delicate organs.
Maintain body shape/ form.
Enable movement / locomotion.
(any two)

18. a) Ear drums/ tympanic membrane.
b) semi circular canals.

19. a) i) Region of elongation /rapid growth in root/radicle.
ii)



iii) To provide water/ moisture for germination.
b) Store food necessary for germination / protect plumule.

20. a) Antigens B.
Rhesus factor.

b) Recipient plasma has antibody A which corresponds to Antigen A which can cause agglutination of red blood cells if they come into contact.

21. Dioecism – male and female flower are borne in difference plants.
ii) Pollens grains are sterile to the stigma of the same plant.

b) To convey the more nucleus to the embryo sac.

22. a) Capture recapture method.

b) Population = $\frac{\text{First marked x second capture}}{\text{marked recapture}}$

$= \frac{400 \times 200}{80}$

$= 1000$

NB; Formula must be stated to earn the mark for working. If formula not stated.(1mk)

c) - No mosquito moves in or out of the area between the two counts.
- The released mosquito mix freely with the remaing population.
- The mark does not alter the mosquito behavior .
- The marked mosquito had enough time to mix with the rest.
- The population number does not vary during the study period.

(any one)

23. a) i) xylem
ii) Apical meristems.

b) Thin walled due to absence of cuticles to allow reduced distance of diffusion of water and mineral salt thus increases the rate of diffusion of molecules.
- Its elongated to increase surface area for absorption of water and mineral salts.
- Presence of large vacuole with dissolved solute to increase osmotic pressure between cell sap and water in the soil.
- Has numerous mitochondria to provide energy which allow uptake of ions by active transport.

(any two)

24. a) – Leaf blade (lamina) is thin, broad and flattened to provide large surface area for absorption of light and gases.
- Transparent cuticles to allow penetration of light to photosynthesizing cells.
- Have petiole or leaf stalk to support the leaf and position it in order to absorb maximum light.
- Leaves are arranged in a mosaic pattern i.e they do not overlap or overshadow to maximize absorption of light for photosynthesis.

(***any one)***

b) – Packages and transport glycoproteins.
- Forms the lysosomes.
- Secretions of important substances e.g enzymes and mucus.
- Form vesicles that transport materials to other parts of the cell e.g proteins.

(***Any two)***

b) Site for protein synthesis.

26. Starch is insoluble in water hence osmotically inactive; reducing effects of absorption of water by osmosis.

(E N D)