

**BIOLOGY  
PAPER 3  
MARKING SCHEME**

1.(a) Food Test

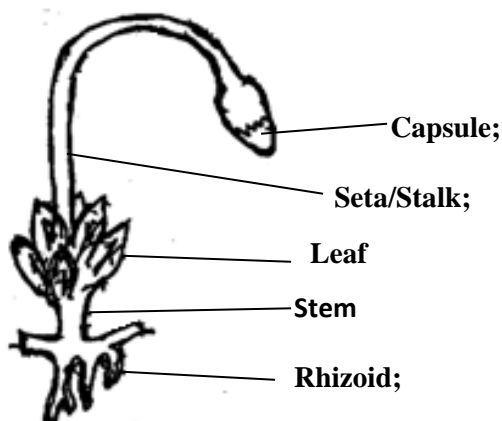
Food Substance	Procedure	Observation	Conclusion
Starch;	Add Iodine Solution;	No colour change	Starch absent;
Reducing sugars;	Add Benedict's Solution and Heat (to boil);	No colour change;	Reducing sugar absent;
Non-reducing sugar;	Add dilute hydrochloric acid, boil, cool then add Sodium hydrogen carbonate (till fizzing stops). Add Benedict's solution and heat;	Orange colour formed (Acc. yellow)	Non-reducing sugar present
Protein	Add sodium hydroxide then copper sulphate solution;	Purple colour;	Protein present;

(b) Role of HCL in experiment  
 - To break down non- reducing sugar to reducing sugar; (1mk)  
 - Rj. If specific sugars mentioned

(c) (i) Organs that produces  $\text{NaHCO}_3$   
 - Liver;  
 (ii) Function of  $\text{NaHCO}_3$   
 - Neutralize hydrochloric acid in food/acid chime to create suitable (alkaline pH) for action of intestinal/pancreatic enzymes;  
 - Emulsify lipids/fats and oils to increase surface area for action of lipase enzyme. (1 x 2marks)

2 (a) (i) Divisions of P and Q  
 P: Bryophyta;  
 Q: Pteriodophyta (1 x 2marks)  
 (ii) Reasons  
 P – has capsule (attached on seta / stalk);  
 - has rhizoids;  
 Q - has fronds / compound leaflets/pinnae (with sori on the underside)

(b) Drawing:



Mg x 3 — x 5

**D = 1**  
**L = 5 = 3**  
     —  
     2  
**Mg = 1**

(c) Differences between P and Q (1 x 2 marks)

P(Bryophyta)	Q(Pteridophyta)
- have rhizoids for anchorage	- have roots for anchorage
- lack vascular system	- have vascular system
- gametophyte is the persistent plant	- sporophyte is the persistent plant

- (d) structure for;
- (i) Asexual reproduction: sporangia / spores (1 x 1 mark)
- (ii) Sexual reproduction: antheridia / anthozoids; oogona / archegonia; (1 x 2= marks)
3. (a) (i) Food chain ending with Tertiary consumer
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C → A → D → E
C → A → D → B
  
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- (ii) Effects of B migrated;-
- population of organism E (snakes) would increase leading to decrease in population of organism D (frogs)
  - population of organism A (grasshoppers) would increase hence grass would reduce; (1 x 2marks)
- (iii) Adaptations of A to locomotion
- has wings for flight;
  - has three pairs of legs for walking;
- (iv) Parts of hind leg of grass hopper: (on the photograph)
- femur; tibia; tarsus; (1 x 3mks)
- (b) (i) Evolutionary concept shown
- Divergent evolution / Adaptative radiation; (1 x 1mark)
- (ii) Functional adaptations shown;
- G; capture and tearing of flesh (of prey)
  - J ; grasping twigs/branches;
  - K; wading in water; (1 x 3marks)
- (iii) Observable features
- H; webbed feet;
  - G; sharp curved talons/claws; (1 x 2marks)