

**BIOLOGY PAPER 3**  
**MARKING SCHEME**

1. (a) Phylum – Arthropoda ;Rej. Anthropoda or Arthropods  
Features;  
(i) Segmented body parts;  
(ii) Jointed legs and appendages;  
Rej. Features like open circulation and hard exoskeleton which cannot be observed from the Photographs.

(b)

Organism	Steps followed	Identity
<b>P</b>	1b, 3a	Diplopoda
<b>Q</b>	1a, 2a, 4a	Scorpionidae
<b>T</b>	1a, 2a, 4b	Crustacea
<b>U</b>	1b, 3b	Chilopoda

- (c) Structure ; - Claws;  
Importance ; - Produce a poisonous substance for paralyzing and killing the prey.

2. (a) Kingdom;- Plantae ; Rej plant

- (b) (i) Presence of chloroplasts;  
(ii) Regular shape;  
(iii) Presence of cell wall;  
- Presence of one large vacuole which is centrally placed;  
- Nucleus located towards the edge of the cell;

**Mark the first three answers only.**

- (c) Image's length between points x and y =  $(95 \pm 1)$  mm = 95,000 $\mu$ m;

Magnification ( X30,000) =  $\frac{\text{Image's length (95000}\mu\text{m)}}{\text{Actual length (Y)}}$ ;

Actual length (Y)

$$Y = \frac{95,000\mu\text{m}}{30,000}$$

$$Y = 3.167 \text{ micrometres};$$

- (d) **A** – Tap root;  
**B** – Fibrous root;  
**C** – Prop root;
- (e) Monocotyledonae; Rej monocot or monocotyledon
- (f) Maize plant /sorghum; Accept any relevant common plant with prop roots.
- (g) - Embryo of seeds have two cotyledons;  
- Continuous stems with branches;  
- Network veined leaves;  
- Leaves attached to stem by petioles;  
- Cross section of stem reveals vascular bundles arranged in a ring or annular pattern.  
-Cross –section of root reveals star-shaped xylem at the centre with phloem alternating with the arms of xylem;  
- Flowers are conspicuous and have brightly coloured petals;  
- Floral parts are found in fours or fives or in their multiple.

**Mark the first 3 answer.**

3.

Test	Procedure	Observation	Conclusion
<b>Iodine</b>	To 2ml of liquid T in a test tube, 3drops of Iodine solution were added and shaken/iodine solution was added drop by drop.	Solution turned blue- black	Starch was present
<b>Benedict's test</b>	To 2ml of liquid T in a test tube, an equal amount of Benedict's solution was added, then mixture was heated until it boiled.	Solution turned from blue to green to yellow and finally to orange.	Reducing sugar was present
<b>Biuret's test</b>	To 2ml of liquid T in a test tube an equal amount of sodium hydroxide solution was added then followed by 3 drops of copper(II) sulphate solution.	Solution turned purple	Proteins were present
<b>DCPI test</b>	To 2ml of DCPIP in a test tube, liquid T was added drop by drop while shaking	Blue colour of DCPIP persisted. No observable colour change;	Vitamin C was absent;

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