**SET 7**

**231/3**

**BIOLOGY**

**MARKING SCHEME**

**CONFIDENTIALS**

Each candidate should be provided with the following items.

* 80 ml of iodine solution.
* 8 cm visking tubing.
* 2 pieces of strong cotton thread 20 cm long.
* 100ml beaker (glass or plastic)
* Means of timing. A wall clock will be appropriate.
* 10ml measuring cylinder.
* 100ml water is 250ml beaker.
* A ruler with mm marking.
* Medium size semi-ripe tomato labelled specimen P.
* 10ml of 10% starch solution labelled X.
* Scalpel.

**MARKING SCHEME**

1. (a) (i)

D2

Epicarp ✓

D1

Mesocarp ✓

Seed ✓

Endocarp ✓

Placenta ✓

NB

D1= Proportionality name

* Features/structures must be of appropriate size. L = $\frac{5}{2}$ = Max 2 Marks

D = 2 Marks

Total 4 Marks

 D2 = Accuracy

 - No broken outlines

 - No shading

 - All structures must be shown

 If D1 is wrong reject D2

 (ii) $\frac{Length of Drawing}{Length of Actual specimen}$ = $\frac{5cm}{4cm}$ ✓ ½ = 1.25 ✓ ½

 1 Mark

 (b) (i) Berry/Succulent ✓ 1

 (ii) – Juicy ✓ 1 endocarp

 - Has several seeds ✓ 1 (which develop from fused carpel)

 (c) (i) Axile ✓ 1 placentation/Central placentation. Rej. Free central

 (ii) Placenta is located at axis ✓ 1 of the fruit.

 (d) (i) Animal(s) ✓ 1 Rej. Insects

 (ii) – Brightly coloured ✓ 1 to attract animals ✓ 1

 - Juicy✓ 1, to attract animals✓ 1 which feed on it.

 - Seeds are covered with hard testa ✓ 1, to resist being digested ✓ 1 by enzymes in animal’s gut. Mark first 2 (2 x 2 = 4 Marks)

 NB. – Earth marks are tied.

 - Rej. if description of feature is not linked with function.

1. (i)

|  |  |  |
| --- | --- | --- |
| Experimental set up | Solution x inside the tubing | Iodine solution outside the tubing |
| Beginning of the experiment | White/cream ✓ 1Rej. yellow | Colour of iodine retained/Yellow/Brown. ✓ 1 Rej. Red  |
| End of the experiment | Solution turns Blue black/Black ✓ 1 | No colour change/Yellow/Brown ✓ 1 |

(ii) Starch ✓ 1

(iii) Semi-permeable ✓ 1

(iv) Iodine (molecules) moved into ✓ 1 starch solution/solution X across the tubing through diffusion ✓

1 turning it blue black.

 Starch (molecules) were too large ✓ 1 such that they could not ✓ 1 move across the tubing into

 iodine solution. 4 Marks

 (b) (i) Diffusion/selective diffusion

 (ii) – Size of diffusing molecules ✓ 1

 - Solubility ✓ 1

 - Thickness of the medium/tubing/membrane

 - Permeability of medium/tubing/membrane.

 Mark first two only 2 Marks

1. (a) Arthropoda ✓ 1

- Segmented body ✓ 1

- Exoskeleton ✓ 1 (made of chitin)

(b) Insecta ✓ 1

 - Three body parts/Body divided into head, thorax and abdomen

 - Three pairs of limbs/legs

 - Pair of antennae

 Rej. Compound eyes and wings because they are missing in specimen Q3.

(c)

|  |  |
| --- | --- |
| Q1 (Bee) | Q3 (Termite)  |
| - Has pair of wings | - Lacks wings |
| - Body hairly | - Body not hairly |
| - Has thick legs | - Has thin legs |
| - Large in size | - Small in size |
| - Head with proboscis | - Head with mandibles |

 - Max 2 Marks

- Mark first two only

(d) (i) - Transport pollen grains

 (ii) - Have pollen basket ✓ (on tibia) for storage ✓ of pollen.

 - Has pollen brush ✓/hairs (on tarsal) for cleaning ✓ pollen from the body into pollen basket.

 Max 2 Marks