**TRIAL ONE EVALUATION TEST**

**BIOLOGY PAPER 3 (PRACTICAL)**

**231/3**

**MARKING SCHEME**

1. (a)

|  |  |  |
| --- | --- | --- |
| **Cylinder in**  | **Texture**  | **Flexibility** |
| AirSolution PSolution Q | Fairly rough;Very rough;Soft/ smooth ; | Fairly flexible;Rigid/stiff;Very flexible; |

 (6mks)

(b)

|  |  |  |  |
| --- | --- | --- | --- |
| **Cylinder in**  | **Initial length** | **Final length**  | **% Change**  |
| AirSolution PSolution Q  | 30mm30mm30mm | 30mm;32+1 mm;28+ 1 mm; | 0%;$^{2}/\_{30}$×100 = 6.67;$^{2}/\_{30}$× 100 = 6.67%; |

 (6mks)

(c) Solution P – Hypotonic / less concentrated;

 Solution Q – Hypertonic / more concentrated; (2mks)

(d) To act as a control experiment; (1mk)

(e) (i) Solution P is hypotonic / less concentrated than the potato cells, water molecules move

 into the potato cells by Osmosis through their cell membranes (that are semi- permeable );

 making the cells turgid to increase the length of the cylinder; (3mks)

 (ii) Solution Q is hypertonic/ more concentrated than the potato cells, therefore water molecules

 moved out of the potato cells by osmosis through their (semi-permeable) cell membranes; making the cells flaccid, hence a decrease in the length of the cylinder (3mks)

(f) (i) Osmosis (1mk)

 (ii)

* Absorption of water by root hairs from the soil;
* Plays a role in the opening and closing of stomata;
* Makes plants cells turgid, thus giving support to herbaceous plants;
* Plays a role in the movement of absorbed water across the cortical cells of the roots to the xylem;
* Plays a role in feeding of insectivorous plants such as venus fly trap; (Max. 3 mks)

 (g) (i) There would be no change in length; (1mk)

 (ii) Boiling kills the potato cells; and denatures their cell membranes; (2mks)

1. (i)

(ii) Magnification = $\frac{lenght of drawing }{length of actual specimen}$

 = X1 – X3 (1mk if formula is indicated.

(b) A larger surface area means efficient photosynthesis, gaseous exchange and transpiration; (1mk)

(c) Broad and flat to increase surface area over which photosynthesis and gaseous exchanges take place;

 Thin lamina to educe the distance over which carbon (iv) oxide and light rays reach photosynthetic cells;

 Presence of chloroplast to trap light energy for photosynthesis;

 Presence of veins and midrib for support to keep the lamina flat;

 Presence of veins which have vascular bundles for transportation of synthesized food to other parts . and water from the roots to the leaves;

 Has a petiole for attachment onto the stem and for holding it in a position to trap maximum light;

 (max 3mks)

1. Agent : Animal;

Reason: Brightly colored to attract animals;

 Succulent/ fleshy to be eaten by he animal;

 Large and conscious to be easily seen by the animals;

(b) (i) Axile;

 (ii) Sexual reproduction;

 (iii) Presence of viable seeds;