**TERM 2-2022**

**BIOLOGY (MARKING SCHEME)**

**FORM FOUR**

**TIME: 1 3/4 HOURS**

**PAPER 3**

Name………………………………………………………………… Adm No………………………………..

School…………………………………………………………………. Class…………………………………….

Signature……………………………………………………………….. Date………………………………………

1 (i) Solution X is hypotonic to/ less concentrated than **cells**/ cell sap of specimen A/ Petiole; hence water molecules move from solution X to the (cells of) petiole by osmosis; leading to increase in size of the cells/ petiole; The inner cortical cells lack cuticle; hence absorb more water/ absorb water faster than the outer epidermal cells; that are covered by cuticle ; The cortical tissue expands/ increases in size more than the epidermal tissue; leading to curvature of the petiole outwards;

(ii) Hypertonic/ More conc. / Has more solute molecules/ Has less water molecules;

(b)

 **Observation** **Conclusion**

**Proteins** No **colour** change/ (Green) colour Proteins absent;

Of solution R persists;

**Reducing sugars** 1. **Colour** changes to green/ Green 1. Traces/ little

 Colour of solution R persists; reducing sugar

 2. Acc. No **colour** change present;

 2. Reducing sugar

 Absent

Note: rj No change alone

 Response 1. are matched

 Response 2. are matched

**Vitamin C** DCPIP solution is decolourised/ Vitamin C

 Present;

Becomes colourless;

(c) (i)

A Cuticle;

B Upper epidermis/ Upper epidermal cell/ layer;

(ii)

 **C D**

Cylindrical/ regular Irregular

Closely packed Loosely packed

Contain chloroplast Contain fewer chloroplast

 **Note: Mark first one only**

(iii) Allows for free diffusion/ circulation of **respiratory** gases/ water vapour;

1. (a) Caryopsis;

(b) (i) Self dispersal/ Explosive mechanism;

 (ii) Presence of lines of weakness/ sutures; Rj weak lines



(d) (i)

P Coleorhiza;

S Plumule;

 (ii) Protects S/ plumule from damage by soil particles;

 (iii) Q/ Endosperm;

(e) Distance between V and W = 3.5 – 13.7mm

 Actual width = 13.5 x 1000 ; OR Actual width = 13.7 x1000

 X30,000 X30,000

 = 0.45micrometers; = 0.46micrometers

OR Actual width = 13.6 x 1000 ;

 X30,000

 = 0.45micrometers;

1. (a)

F Cortex;

J Cornified layer;

K Granular layer;

(b)

 L Secrete sebum which keeps hair and epidermis supple/ waterproof/ contain antiseptic substances/ kill micro-organisms;

M Conduct sweat to the skin surface;

(c)

 Coiled to increase surface area for absorption of excess water/ mineral salts/ urea/ lactic acid/ sweat from the surrounding blood vessels/ tissues;

 Made up of numerous secretory cells that absorb excess water / mineral salts/ urea/ lactic acid/ sweat;

(d)

F/ Cortex;

(e) (i)

Q/ Fine adjustment knob;

 (ii)

To avoid destruction/ distortion/ of the cells/ tissues/ layer;

To obtain thin sections;

Note: Any one

 (iii)

Hinge/ Hinge screw;

 (iv)

Magnifies the cell;

Increases the resolution/ resolving power of the eye;