MARKING SCHEME.

231/3

Biology

Paper 3

(Practical)

Time: $1\frac{3}{4}$ ***HOURS***

SUKELLEMMO JOINT MOCK 2020

Instructions to Candidates

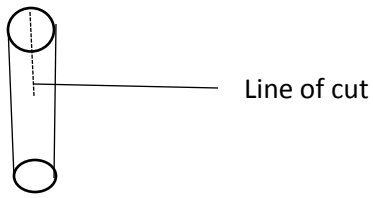
- Answer ALL the three questions in the spaces provided.
- Spend the first 15 minutes of the 1 hour & 45 minutes to read through the paper carefully before commencing your work.
- One may be penalized for recording irrelevant information and for incorrect spelling, particularly of *technical* terms.
- **Additional pages must not be inserted.**

For Examiner's Use Only

QUESTION	Maximum Score	Candidate's Score
1	12	
2	15	
3	13	

- **This paper consists of 7 printed pages.**
- **Candidates should check the question paper to ensure that all the pages are printed as indicated and no question is missing.**

1. You are provided with two pieces of plant material labelled specimen D. using a scalpel cut a longitudinal section half way through the middle of each piece as shown in the diagram below.



Place one piece in solution labelled L_1 and the other piece in the solution labelled L_2. Allow the set up to stand for 30 minutes.

(i) Record your observation (2 marks)

L_1 The stem is hard/firm/stiff;

L_2 The stem is soft;

(b) Examine the pieces.

(i) Record other observations besides those made in (a) (i) above. (3marks)

L_1 The slit opens wider; and bends outwards towards the epidermis/cuticle;

L_2 The slits remain close together;

(ii) Account for the observation in (a) (i) above. (5 marks)

Solution L_1 is hypotonic to the cell sap; water moved into the stem cells by osmosis; the cells of the stem became turgid;

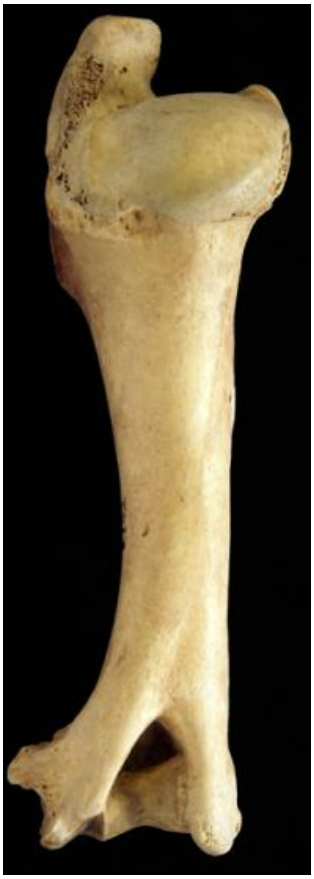
Solution L_2 is hypertonic to the cell sap; water moved out of the cells by osmosis making the cells of the stem become plasmolysed and the tissue soft;

(ii) Account for the observation in (b) (i) above. (3marks)

L_1 The cells in the inner surface/cut surface enlarge more because they took in more water by osmosis; than the outer cells which have cuticle; in L_2 the cells in the cut surface lost more water by osmosis than the outer cells with cuticle;

2. You are provided with photographs of specimen M and N. Examine them.

M



N

a) Identify the bones. (2marks)

M **Humerus;**

N **Ulna & radius;**

b) Name the parts labeled X and Y. (2marks)

X **Olecranon process;**

Y **Sigmoid notch;**

c) State **three** significance of the part labelled Y. (3 marks)

Y **(i)** **Attachment of muscles/tendons;**

(ii) **Formation of hinge joint ;(with adjacent bone)**

(iii) **prevents overstretching of the forearm backwards**

d) Calculate the actual size of specimen labelled M. (Show your working). (3marks)

Actual length = $\mathbf{22.6 \pm 0.1}\boldsymbol{cm}$;

Drawing length = $\mathbf{11.3 \pm 0.1}\boldsymbol{cm}$;

Magnification$= \frac{\boldsymbol{Drawing\ length}}{\boldsymbol{Actual\ length}} = \frac{\mathbf{11.3}\boldsymbol{cm}}{\mathbf{22.6}\boldsymbol{cm}}; = \frac{\mathbf{11}\boldsymbol{cm}}{\boldsymbol{Actual}} = \mathbf{22}\ \boldsymbol{cm};$

e) Name the part of the mammalian body from where the specimens were obtained. (1mark)

Forelimb/arm/legs; acc humerus –upper arm; Ulna and radius lower arm;

f) State with reasons the type of joint formed at the proximal and distal end of M (4marks)

Proximal end Ball **and socket;**

Reason **Head shaped like a ball/rounded head/round head/Allows movement in all planes/360°;**

Distal end Hinge **joint;**

Reason **Allows movement in only one plane/presence of a groove/presence of condyles/troches which articulates with the sigmoid notch;**

3. a) The photographs below are for specimen labelled P,Q and R.

P

Q

U

R

V

(i) State with a reason the class to which specimens P belongs. (3 marks)

P **Monocotyledonae;**

Reasons **Leaves with parallel veins; presence of leaf sheath;**

(ii) What type of germination is exhibited by Q? (2marks)

Q **Epigeal;**

Give a reason for your answer.

The cotyledons carried above the soil surface;

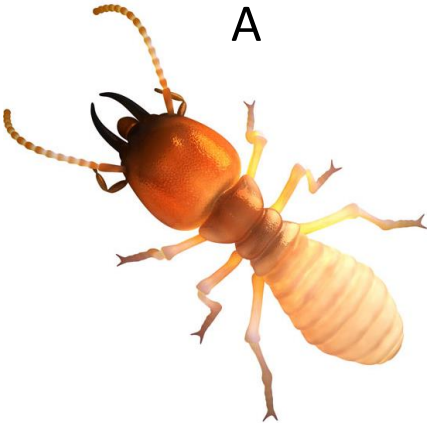
(iii) Name the parts labelled U and V on the photographs above. (2marks)

U **Hypocotyl;**

V **cotyledon;**

3. (b) The diagrams below shows the photographs of specimens A and B

A



B

(b) (i) Using observable features only, state the class to which the specimen in photographs A belongs. (1mark)

Insecta;

(ii) Give a reason for your answer. (1mark)

Presence of six legs/ three body parts/ one pair of antenna;

b) (iii) State the habitat in which the specimen in photograph B is found. (1mark)

Dead decaying organic matter;

b) (IV) Identify the stage of development of the specimen in photograph B. (1mark)

Larva;

(v) Give a reason for your answer in (b) (iv) above. (1mark)

Absence of legs/wings/presence of fleshy protuberances/presence of a hook-like tooth