

KURIA EAST SUB-COUNTY JOINT EXAMINATION COUNCIL 2015

231/3

BIOLOGY

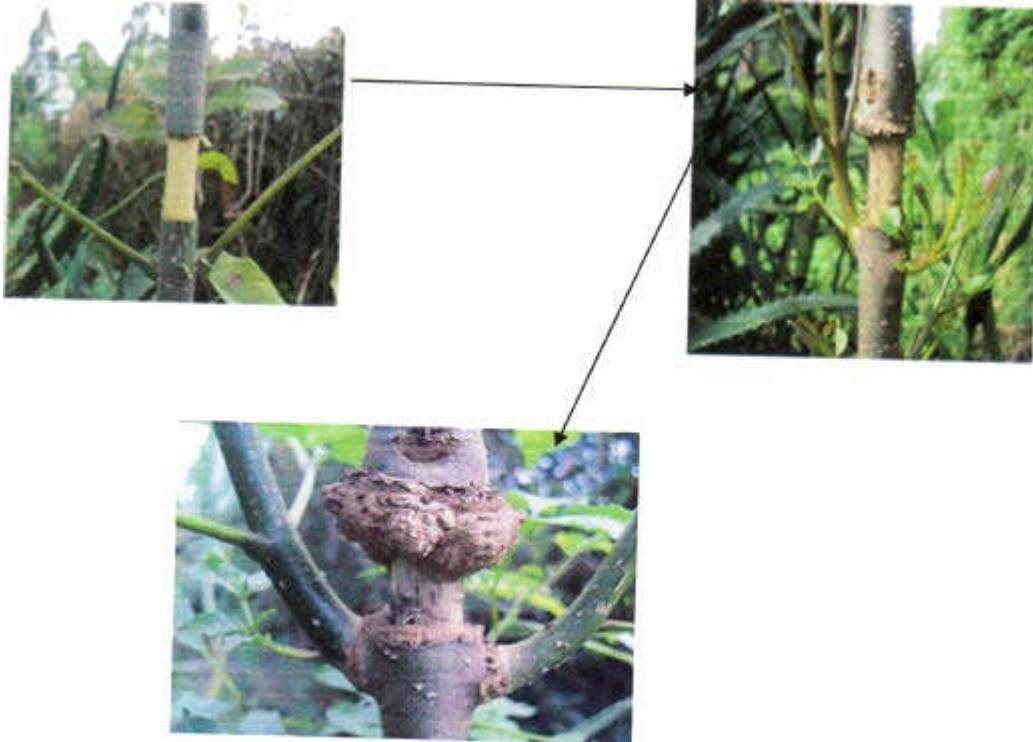
PAPER 3

(PRACTICALS)

JULY/AUGUST 2015

TIME: 1 ³/₄ HOURS

1. a) Use the photograph of plant experiment to answer the questions that follow.



- i) Name the process being investigated. (1 mark)
 - ii) Name the plant tissue involved in the physiological process illustrated above. (1 mark)
 - iii) Name the physiological process involved in the process illustrated above. (1 mark)
 - iv) How is the plant tissue named in 1 (a) (iii) above adapted to its function.
- b) Study photographs C and D and answer the questions.

Photograph C



Photograph D



- i) With a reason state the agent of pollination of each of the flowers. (4 marks)
- ii) Classify the animal in photograph D using the taxonomic units below and reasons for your answer (4 marks)

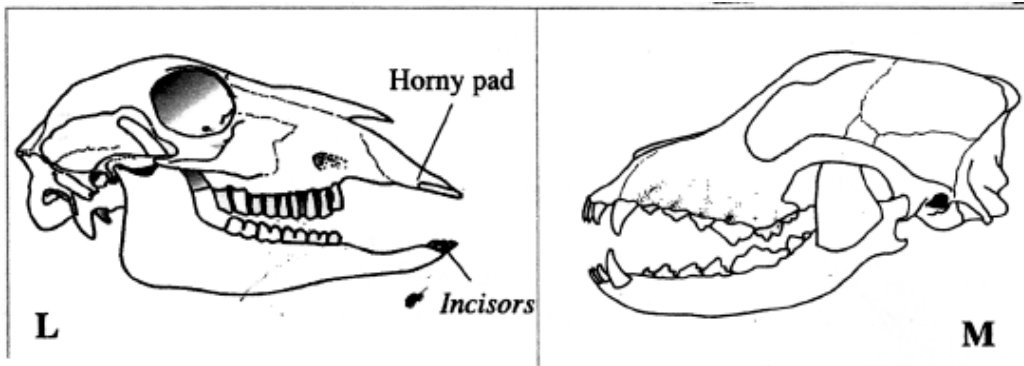
Taxonomic unit

Reason

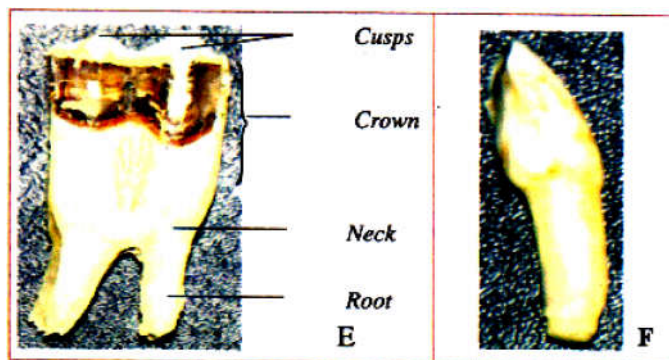
Phylum

Class

2. Below are photographs of specimen labelled L and M which were obtained from different animals. Examine them.



- a) Suggest the diet of each of the animals whose skulls are shown in the diagram. Give reasons for your answer (6 marks)
 b) Write the dental formula of the animal whose skull are shown in diagrams L and M. (2 marks)
 c) Examine the following diagrams labelled E and F.



- i) With reasons identify E and F (1 mark)
 Identify E (1 mark)
 Reasons (2 mks)
 Identify F (1 mark)
 Reasons (2 marks)
 3. You are provided with a sample of food labelled P in solution form. Using the reagents, carry out tests on the food sample to identify the type of food substances present. (12 marks)

Food substance	Procedure	Observation	Conclusion
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BIOLOGY PAPER 231/3
PAPER 3
MARKING SCHEME

1. (a) (i) Translocation
(ii) Phloem tissue
(iii) Active transport/mass flow through diffusion.
(iv) - Have sieve plates that support the phloem tissue.
- Have sieve pores that acts as a pathway to allow movement of materials.
- Sieve tubes are cylindrical and joined end to end interconnected by cytoplasmic filaments.
- Sieve elements lack other cell components like nuclears.
- Has companion cells that have numerous mitochondria to supply energy needed for active transport.
- Presence of plasmodesmata between sieve elements and companion cells to facilitate movement of materials between.
- (b) (i) C wind – Inconspicuous petals/large anthers loosely attached to flexible filaments/long feathery stigma which hang outside the flower.
D – Insect – Large flowers with brightly coloured petals/produce nectar (insect on diagram)
Reason
(ii) Phylum Arthropoda - Jointed appendages/presence of exoskeleton/segmented body/
3 body parts (2 mks)
Class Insecta - 3 body parts/ A pair of antennae pair of compound
eyes/spiracles for breathing.
2. (a) Skull L. Vegetation/grass/herbs/plants (1 mk)
Reasons
(i) Presence of diastema
(ii) Presence of horny
(iii) Pronounced cusps/ridges in the molars for grinding vegetation
Skull M – Flesh/meat/bones/carnivore rej. carnivorous
- Reasons**
- Pronounced long curved sharp/pointed canines for grasping/grinding/tearing prey.
- Carnassial teeth for cutting and crushing bones.
- (b) $I \frac{0}{3} \quad C \frac{0}{1} \quad PM \frac{3}{3} \quad M \frac{3}{3} = 32$
 $M I \frac{3}{3} \quad C \frac{1}{1} \quad PM \frac{4}{4} \quad M \frac{2}{3} = 42$
- (c) E – Molar tooth
Reasons
- Has two roots
- Cusps
F - Canine
Reasons
- Sharp
- Has one root

Food substance being tested	Procedure	Observation	Conclusion
Protein	To 2ml of food substance P, add equal amounts of Sodium Hydroxide solution. Shake then add Copper (II) Sulphate dropwise	Colour changes to purple	Protein present
Ascorbic acid/Vitamin C	To 1cm ³ of DCPIP in a test tube, add the food substance dropwise	DCPIP decolourises	Ascorbic acid present
Starch	Put 1cm ³ of substance P into a test tube. Add 3 drops of iodine solution	Colour changes to blue black/blue/black	Starch present