KAHURO/KIHARU DISTRICT JOINT EXAMINATION - 2015
231/3
BIOLOGY
PAPER 3
(PRACTICAL)

CONFIDENTIAL:

Each candidate should be provided with:

- Orange 1 piece (E).
- D.C.P.I.P 5cm³.
- Benedicts – access to.
- Dilute HCl – access to.
- Sodium hydrogen carbonate – access to.
- Copper (II) sulphate – access to.
- Sodium hydroxide – access to.
- Scarpel.
- Means of heating – access to.
- Test tube holder.
- Dropper.

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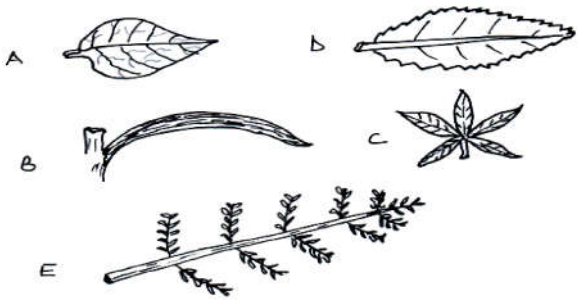
JULY/AUGUST, 2015
TIME: 1¾ HOURS

1. You are provided with Specimen E.
   (a) Identify the part of plant the specimen belongs. (1 mark)
   (b) Give reason for your answer in 1(a) above. (1 mark)
   (c) Cut a transverse section of the specimen E and draw and label the parts of the specimen. (5 marks)
   (d) Calculate the magnification of your drawing. (1 mark)
   (e) State the type of placentation shown in the above specimen. (1 mark)
   (f) (i) Name the mode of dispersal. (1 mark)
   (ii) Give reasons for d(i) above. (3 marks)
2. (a) Squeeze some juice from Specimen E to obtain juice E and use it to carry out food tests.
   Using the reagents provided.

TEST	PROCEDURE	OBSERVATION	CONCLUSION

(12 marks)

   (b) State the use of:
   (i) Dilute hydrochloric acid. (1 mark)
   (ii) Sodium hydrogen carbonate. (1 mark)
3. (a) The diagrams below shows leaves obtained from five different plants.



Using the key provided identify the plants from which the leaves were obtained in each case give the sequence of steps in the key which you followed to arrive at the identify.

1 (a) Leaf simple ---------- go to 2
(b) Leaf compound ---------- go to 4

2. (a) Leaf with parallel veins---------- Maize
(b) Leaf with network vein ---------- go to 3

3. (a) Leaf margin smooth ---------- Bou gainvillea
(b) Leaf margin serrated ---------- Hibiscus

4. (a) Leaflets emerging from one stalk like fingers ---------- Bombax
(b) Leaflets emerging from several stalk attached to main stalk-------- Acacia

Leaf	Steps	Identity
A		
B		
C		
D		
E		

(10 marks)

   (b) State **three** differences between the classes from which leaf A and leaf B were obtained from. (3 marks)

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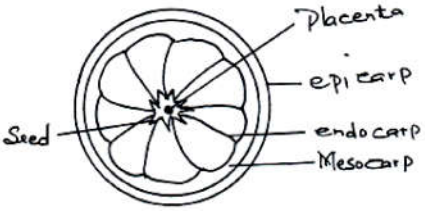
PAPER 3
MARKING SCHEME

1. (a) Fruits;
(b) Has two scars; Has enclosed seeds.
(c)



- A well drawn diagram (1mk)
- Any of four labelled parts. (1 x 4 = 4mks)
Rej. drawing if shaded

(d) Magnification $= \frac{Length\ of\ drawing}{Length\ of\ object}$

Range between x ½ to x 3 (1mk) NB:
- Measurements units must be shown.
- Final answer should have no limits.
- The X sign must appear.

(e) Axile placentation;
(f) (i) Animal;
(ii) Seed have hard/slimy seed coat/to prevent digestion;
Scented to attract animals;
Succulent to attract animals;

2.(a)

Test	Procedure	Observation	Conclusion
Vitamin C	- Put 2cm³ of DCPIP in a test tube than add juice E drop by drop;	DCPIP is decolourised;	- Presence of vitamin C;
Reducing sugars	- Place 2cm³ of juice E into add benedicts solution and heat;	- Colour change from blue to green and finally to orange.	- Presence of reducing sugars.
Non reducing sugars	- Place 2cm³ of juice E into a test tube add a few drop of dilute HCl heat then cool. Add $NaHCO_3$ drop by drop until fizzling stops; Add benedicts solution and heat.	- Colour change from blue to green and then to orange.	- Presence of non reducing sugars.
Proteins	- Place 2cm² of juice E into a test tube. - Add sodium hydroxide and then copper (II) sulphate dropwise.	- Blue colour of copper (II) sulphate retained.	- No proteins.

(b) (i) Hydrolyses non reducing sugars to reducing sugars;
(ii) Neutralises the dilute HCl.

3. (a)

Leaf	Steps	Identity
A	1a, 2b, 3a;	Bounga budlen;
B	1a, 2a;	Maize;
C	1b, 4a;	Bombax;
D	1a, 2b, 3b;	Hibiscus;
E	1b, 4b;	Acacia;

(b) Differences

A dictyledonae	B monocotyledonae
- Leaf with network venation. - Tap root system. - Vascular bundles arranged in a ring in the stem. - Presence of pith in stem.	- Leaf with parallel venation; - Fibrous root system; - Vascular bundles randomly arranged in the stem; - Absence of pith in stem;

1Max 3 (3mks)