

KASSU JET EXAMINATION – JUNE 2015

231/3

BIOLOGY PRACTICAL

PAPER 3

JUNE 2015

CONFIDENTIAL INSTRUCTIONS TO SCHOOLS

Each candidate will require:

- Specimen **S** (A sukuma wiki - Kale) leaf.
- Coloured photographs on page 3 of the question paper.
- Specimen **L** (Thoracic vertebra).
- Specimen **M** (Lumbar vertebra).

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(Kenya Certificate of Secondary Education)

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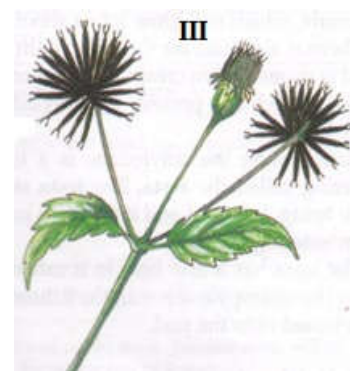
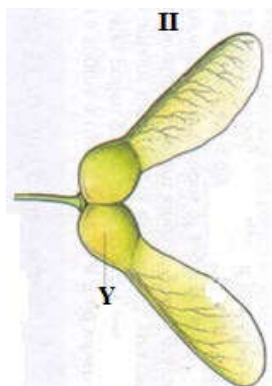
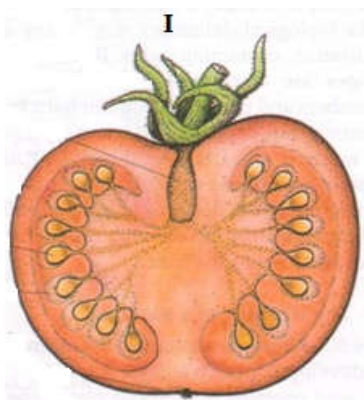
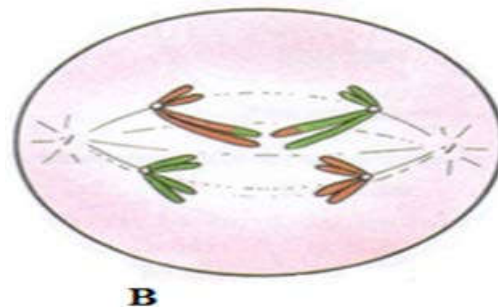
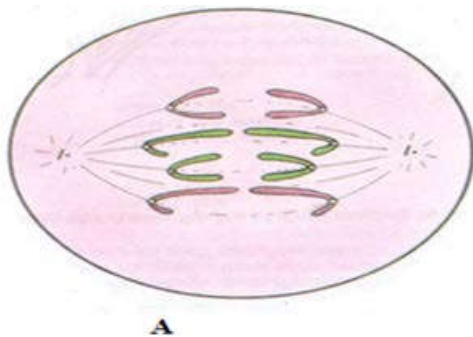
BIOLOGY PRACTICAL

PAPER 3

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Time: 1 ¾ Hours

1. You are provided with specimen **S**. Study the specimen carefully then answer questions that follow.
 - a) Make a drawing of specimen **S** and label midrib, leaf lamina, leaf margin, and leaf petiole. (3mark)
 - b) Name the class to which the specimen belongs. (1mark)
 - c) Identify two features of the specimen **S** that may have been used to place it in the class named in (b) above. (2mark)
 - d) Using observable features only, explain how the specimen **S** is adapted to its photosynthetic function. (6mark)
2. Use the photographs provided to answer the questions that follow:

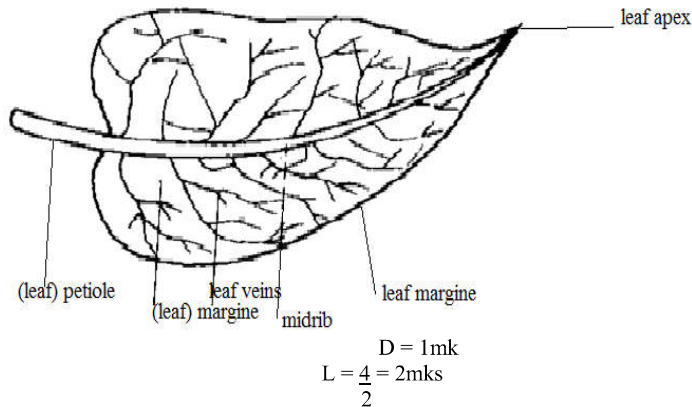


- a)
 - (i) Identify the type of cell division represented in the photographs **A** and **B**. (2mark)
 - (ii) With a reason, name the stage of cell division represented in each case. (4mark)
 - (iii) Name the parts of human body where the process **B** represented above occur. (2mark)
- b)
 - (i) What type of fruit is represented by photograph **I**? Give two reasons. (3mark)
 - (ii) Name the agent of dispersal for fruits **II** and **III**. (2mark)
 - (iii) How are the fruits adapted for the mode of dispersal stated in (b) (ii) above? (2mark)
 - (iv) Identify the type of placentation shown by photograph **I**. (1mark)

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3. You are provided with specimens labeled **L** and **M**. Study them then answer questions that follow:
- a) Identify the specimens. **L** and **M** (2mark)
 - b) Name the part of the body where each is found. (2mark)
 - c) With which bone does the vertebra **L** articulate, other than those of the vertebral column? (1mark)
 - d) Using observable features only, state two adaptations of the specimen **M** to its functions. (2mark)
 - e) Observe the specimen **L** from the anterior view. Name the parts of the vertebra that are most pronounced. (3mark)
 - f) Name the cartilaginous pad found between two adjacent vertebrae and state its function. (2mark)
 - Name
 - Function

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1. a)



- b) Dicotyledonae;
c) Broad lamina; Network/reticulate venation; Presence of a petiole;
d)
- Numerous leaf veins; to transport water and mineral salts to the photosynthetic cells / remove products of photosynthesis;
 - Green in colour due to the presence of chlorophyll; to absorb light energy for photolysis / splitting water molecule into hydrogen atom/ion and oxygen atom;
 - Broad lamina; to provide large surface area for absorption of light energy and carbon IV oxide;
 - Thin leaf to reduce distance for light and gases to/from photosynthetic cells;
2. a) (i) A: Mitosis;
B: Meiosis;
(ii) A: Anaphase;
Reason: (Sister) chromatids have separated and are moving/migrating towards the opposite poles; formed V-shaped appearance;
B: Anaphase I;
Reason: Homologous chromosomes separate and move towards the opposite poles;
(iii) Ovaries/Ovary; Testes/Testis;
- b) (i) Type: Berry;
Reasons: Has fleshy (mesocarp and endocarp); Has numerous/many seeds;
(ii) II: Wind;
III: Animal(s);
(iii) II: It has extended pericarp to form wing/wing-like structure that increase the surface area for buoyancy; owtte
III: It has hooks/hook-like structures on the pericarp which stick to animal fur/skin;
- (iv) Central/Axile;
3. a) L: Thoracic vertebra;
M: Lumbar vertebra;
b) L: Thoracic region/upper part of the back;
M: Lumber/abdominal region;
c) Ribs;
d)
 - Thick centrum to support the weight of the upper part of the body;
 - Broad neural spine/transverse processes to provide large surface area for attachment of abdominal muscles;
 - Metapophyses and anapophyses to increase the surface area for attachment of abdominal muscles;
e) Neural spine; Neural canal; Centrum;
f) Name: Intervertebral disc;
Function: Absorbs shock/reduces friction (between two vertebrae); allow flexibility of the vertebral column;