



# MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education  
**THE MOCK EXAMINATIONS, 2025**

231/1

**BIOLOGY**  
May/June, 2025

**PAPER 1**  
**TIME: 2Hrs**

Name: MARKING GUIDE Admission No: .....

Stream: ..... Signature: ..... Tuesday, 27<sup>th</sup> May, 2025; 10:45-12:45pm

### Instructions

- (a) Write your name, admission number, date, stream and signature in the spaces provided above.
- (b) All answers must be written in the spaces provided in this question paper.
- (c) This paper consists of 12 printed pages with 26 questions.
- (d) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing
- (e) Candidate should answer the questions in English

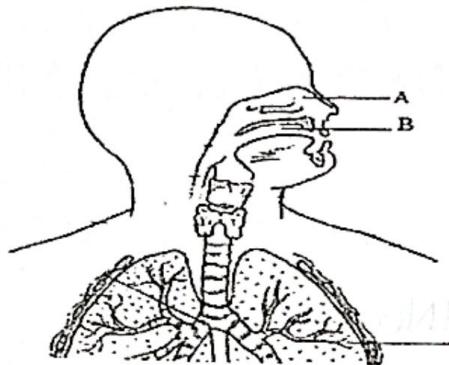
### FOR EXAMINERS' USE ONLY

Question	Maximum Score	Candidate's score
1-25	80	

1. How does nutrition as a characteristic of living organisms differ in plants and animals.

Plants are Autotrophs; Acc. Plants make own food. (2 marks)  
Animals are Heterotrophs; Acc. Animals depend on  
already made food.  
OWTTE i.e definition.

2. The diagram below represents a certain organ system in human. Study it to answer the questions that follow.



(i) Identify the part labeled A.

(1 mark)

A - Nasal Cavity

rej. Nose

(ii) Give **three** adaptations of the part named above.

(3 marks)

Has hairs for trapping dust particles;  
Has Olfactory cells for detecting smell;  
Goblet cells to secrete mucus for trapping dust particles;

(iii) A form two student wanted to kill a cockroach by immersing its head in water for 35 minutes. Explain why it could not be drown.

(1 mark)

Cockroach breath through Spiracles which is located  
at the thorax and abdomen;

3.(a) What is cell specialization?

(1 mark)

The Structural modification of a cell to perform certain  
specific functions;

(b) State two specialized cells in pancreas.

(2 marks)

Alpha (Cells)

Beta (Cells)

acc. Islets of Langerhans

4.(a) Apart from iodine solution, name any other stain used during preparation of a temporary slide.

(1 mark)

Eosin

Safranin

Haematoxyline

Methylene blue;

Fast green

(b) Using a microscope, a student counted 45 cells across a field of view. Whose diameter was

5000  $\mu\text{m}$ . Calculate the average length of the cells. Show your working.

(2 marks)

$$\text{Length} = \frac{\text{Diameter of View}}{\text{No of Cells}} \quad \text{length} = \frac{5000}{45}$$

$$= 11.11 \mu\text{m}$$

5.(a) Name the two end products of lipids breakdown

(2 marks)

fatty acid(s);

Glycerol(s);

(b) State the part of alimentary canal where the above digestion takes place.

(1 mark)

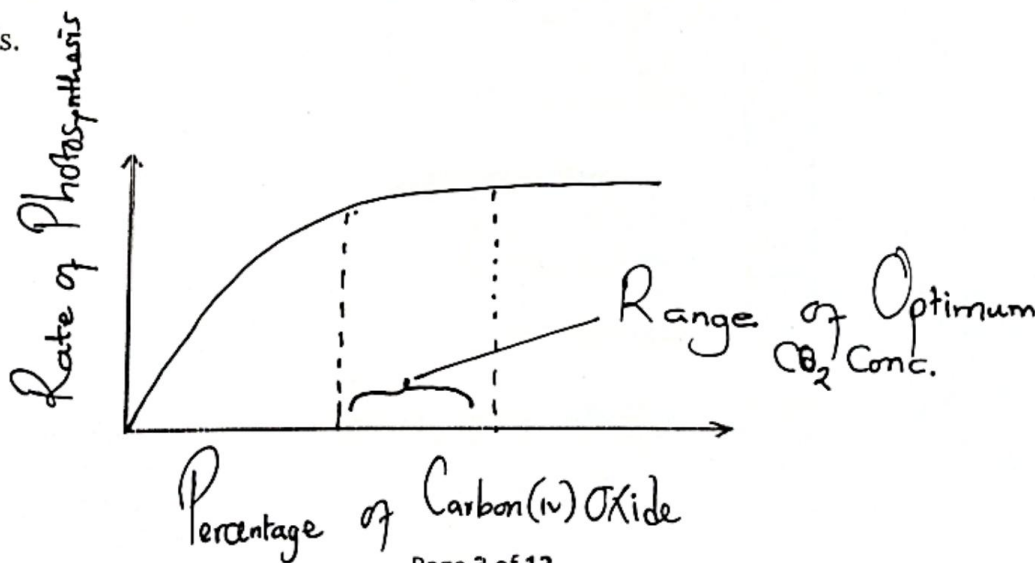
Ileum;

acc. Small Intestine

Duodenum

6(a) Sketch a curve to show the effect of carbon (IV) oxide concentration on the rate of photosynthesis.

(1 mark)



b). Explain the shape of the curve drawn above.

(2 marks)

An increase in Carbon(IV) oxide concentration results in a linear increase in the rate of photosynthesis. Upto a certain level when it slows and finally remains constant.

c) State three ways in which carbon (IV) oxide is transported in animals.

(3 marks)

Carbaminohaemoglobin  
Weak Carbonic acid  
Bicarbonate ions; // Hydrogen carbonate ion;

7. Name two theories that explain the evolution mechanism.

(2 marks)

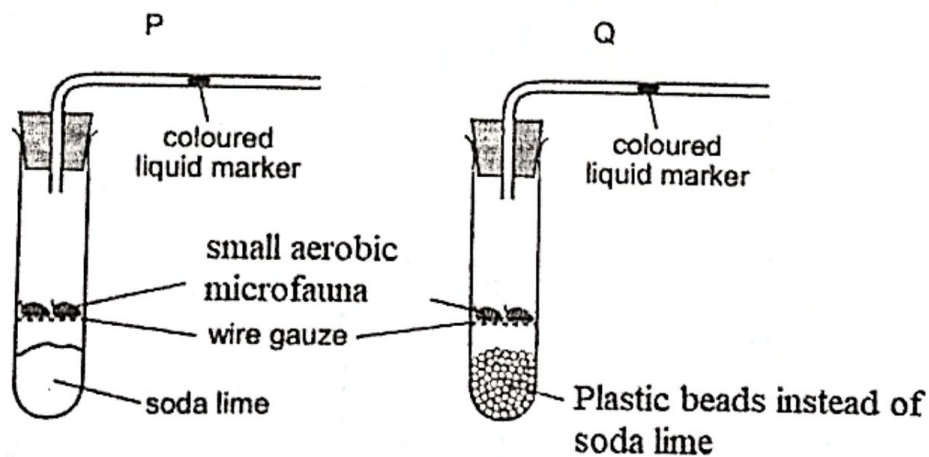
Lamarck's theory  
Charles Darwin's theory

8. Define the term organic evolution.

(1 mark)

Is the emergence of

9. The experimental set-up below was used by students at school to investigate a certain physiological process.



(a) Why was set-up Q included in the experiment. (1 mark)

Control Experiment; Rej act as; a Control Experiment.

(b) State and explain the observations made in set-up P above. (3 marks)

Coloured liquid marker moves towards the test-tube; The small aerobic microfauna carry out (aerobic) respiration (using oxygen) and produces Carbon(IV) oxide the Soda lime absorbs the CO<sub>2</sub>; reducing the volume of the gas in the test-tube;

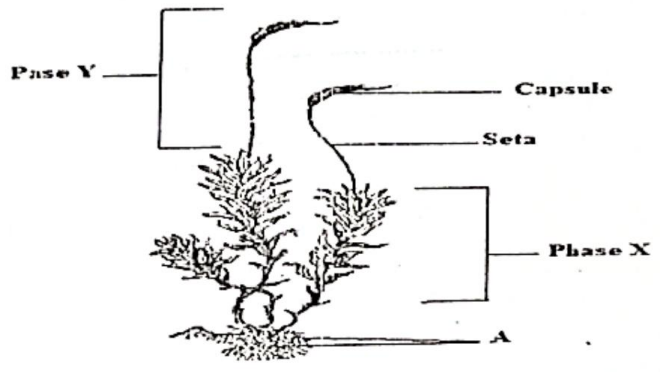
10. Name two gaseous exchange structures found only in aquatic plants. (2 marks)

Pneumatophores;  
Aerenchyma tissue;

11. List two differences between class Mammalia and Aves. (2 marks)

Mammalia	Aves
- Have mouth;	- Mouth modified into beaks
- Has fur / Hairs	- Has feathers:
- Has Mammary glands;	- lack Mammary glands;
- No Scales	- Have Scales
- Excrete Urea	- Excrete Uric acid

12. Study the diagram of the specimen below to answer the questions that follow.



(a) identify phase X and phase Y.

(2 marks)

X Gametophyte ; (generation)  
 Y Sporophyte ; (generation)

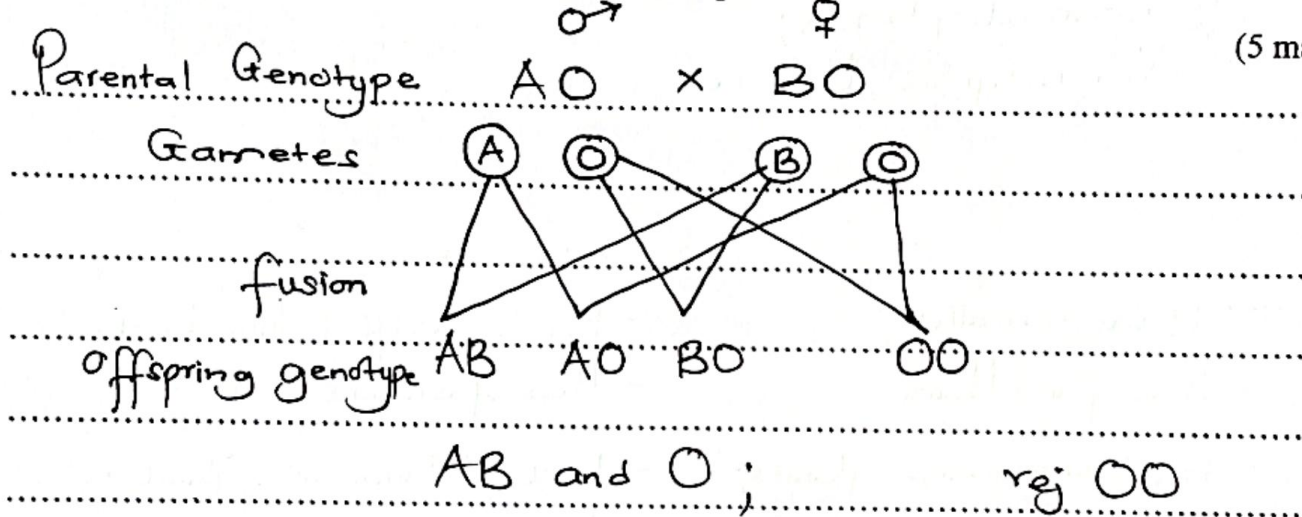
(b) Define the term alternation of generation

(1 mark)

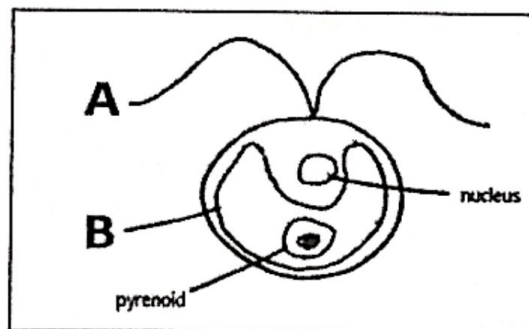
Reproduce by means of Spores / Sporophyte / asexual  
 and gametes / gametophyte / Sexual OWTTE

13. In a case of disputed parenthood, a couple with 7 children went to court challenging the right parenthood of their last born son. The lawyer argued the case with fact that the Father had blood group A (heterozygous) and mother had blood group B (heterozygous) and saying there is no way they could have gotten the son whose blood group was different from them. Using a genetic cross, show the two possible blood groups that could have sparked the case.

(5 marks)



14. The diagram below represents a living organism. Study it and answer the questions that follows.



(a) (i) State the kingdom in which the organism belongs.

(1 mark)

Protista / Protoctista

ii) Give a reason for your answer.

(1 mark)

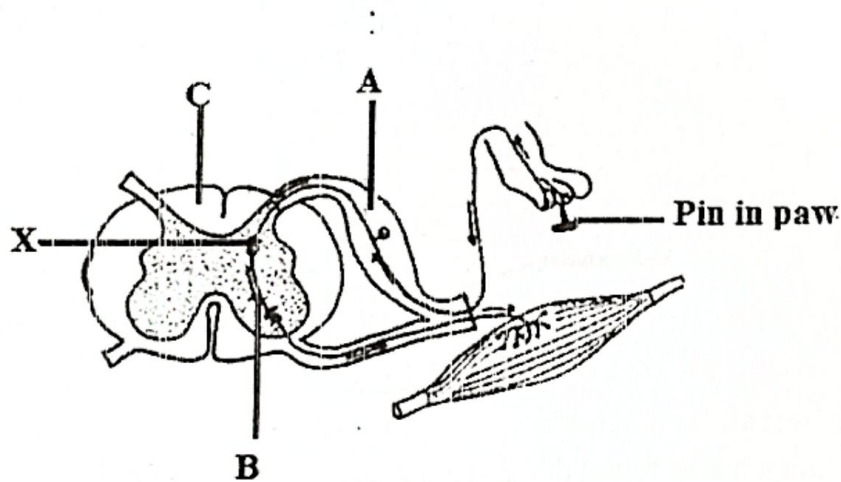
Pyrenoid for Storage

(b) State the difference between structure labelled B and the one found in Spirogyra

(1 mark)

Spirogyra has a spiral / Shaped Chloroplast while  
Euglena has a Cup-Shaped Chloroplast

15. The diagram below indicates a type of response in a given animal when touching a sharp object.



(a). Name the part labelled A.

(1 mark)

Sensory neuron.

(b). In the space provided below give the letter(s) that represents the part of the reflex arc that consists mainly of axons of sensory and motor neurons.

(1 mark)

C;

(c). State the role of part labeled B.

(1 mark)

Delay nerve impulse between motor and sensory neurone;

(d). Name the enzyme that enable proper functioning in the part labelled X.

(1 mark)

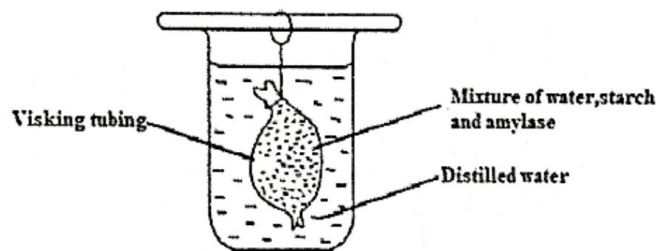
Cholinesterase; (Enzyme) / Acetylcholinesterase;

16. Explain why plants and turtles increases in size as long as they live.

(2 marks)

They have cells that continue dividing throughout their lives; resulting into continuous increase in size / indeterminate growth;

17. The set up below was prepared by a form one student study it and answer the question that follows.



a) After a few hours it was found that reducing sugars were present in the distilled water. State what happened;

(i) Inside the the visking tubing

(1 mark)

Starch was broken down by amylase into reducing sugars / Maltose;

(ii) At the walls of the visking tubing

(1 mark)

The reducing sugars diffused through the selectively permeable membrane into the distilled water;

(b) Give the role of the physiological process above in reproduction in plants (1 mark)

Pushes the Sucrose to the pollen tube; Processes like pollen tube growth during fertilization;  
- Scented Insect pollinated flowers;

18.(a) Distinguish between parthenocarpy and parthogenesis (1 mark)

Parthenocarpy - Development of a fruit from an (ovary) without fertilization.

Parthenogenesis - Dev of an organism from an Ovum without fertilization;

(b). Name one fruit where parthenocarpy takes place. (1 mark)

Pineapple (fruit)

Banana (fruit)

19. What is the causative agent of the following conditions?

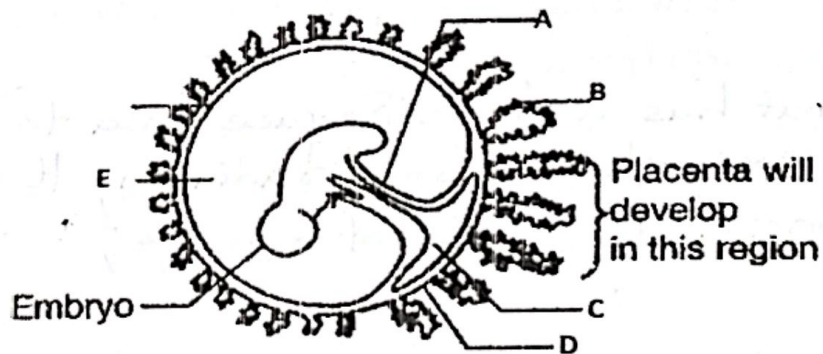
(a) Bilhazia (1 mark)

Schistosoma spp haematobium, japonicum, mansoni

(b) Candidiasis (1 mark)

Candida albicans

20. The diagram below illustrates the relationship between the human embryo and its embryonic membranes. Study it and answer the questions that follow:



(a) Name the parts labelled B and C

B: Chorion / Chorionic villi / Trophoblastic Villi; (1mark)

C: Allantois (1mark)

(b) (i) What makes up the part labeled E? (1 mark)

Water; Electrolytes e.g Sodium potassium  
Proteins; lipids & Urea; Carbohydrates.

(ii) Give two roles of component named in (b)(i) above (2marks)

Protects the fetus from physical trauma / Injury;  
Regulating temperature;  
Allowing free movement for mucus / Skeleton developments;

21. (a) What are the functions of the following eye muscles

i. Lateral rectors muscles

Allows for left and right / Sideways movement of the (1mark)  
eyeball;

ii. Superior and Inferior muscles

Allows for upwards and downward movement of the (1mark)  
eyeball;

22. Name the **three** bones that forms the ear ossicles (3marks)

Malleus;

Incus;

Stapes;

23. (a) An elephant weighing 2000Kg requires 3000kJ per gram body weight while a rat weighing 100g requires 5000kJ per gram body weight. Explain (2marks)

A rat has a large Surface area to Volume ratio; hence  
loses more heat through radiation; It eat's more to  
Compensate the lost energy;

(b). Name a plant excretory product used for the following functions.

(i) Meat tenderizer

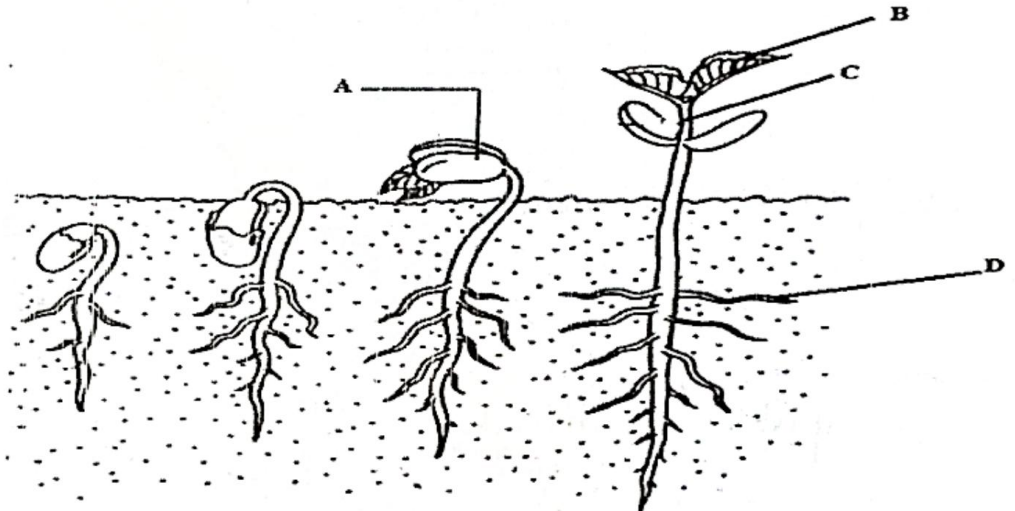
Papain;

(ii). Treatment of leather and manufacture of ink

(1 mark)

Tannin(s);

24. The images shown below were taken from a given experiment whose objective was to determine germination using given seed that was subjected into various suitable conditions. Use the images given below to answer the questions that follows:



(a). Name the parts labelled A and C

(2marks)

A - Cotyledon;

C - Hypocotyl;

(b). What is the function of the part labelled D.

(1mark)

- Provides anchorage / Support // absorption of dissolve mineral salts;

- Absorption of Water;

(c) Explain how the part labelled A is carried above the soil level

(2 marks)

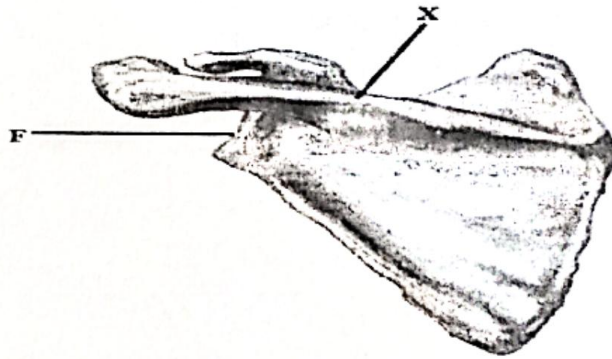
The hypocotyl straightens; and (cells) elongates, pulling the cotyledons above the ground.

25. Insulin hormone increases during times of stress. Explain.

(2 marks)

For the activation of the liver cells to oxidize more glucose; hence to provide more energy to overcome stress;

26. The diagram below represents a bone of a mammal.



(a) Identify the bone

(1 mark)

Scapula (bone);

(b) Name the part labelled X

(1 mark)

Spine; or Neural Spine.

(c) Name the bone that articulate with the bone at part marked F.

(1 mark)

Humerus (bone)