KENYA CERTIFICATE OF BASIC EDUCATION

SENIOR SCHOOL ASSESSMENT

DECEMBER ACTIVITIES 2026

GRADE 10 – BIOLOGY

Time: 2 Hours

LEARNER'S DETAILS

Name: _____. School: _____.

Assessment Number: _____. Date: _____.

School Code: _____. Signature: _____.

INSTRUCTIONS TO CANDIDATES

1. Write your name in the spaces provided above.
2. Write the name of your school and your school code in the spaces provided.
3. Write your assessment number and the date of the assessment and sign in the spaces provided.
4. This paper consists of two sections: A and B.
5. Answer all questions in section A and section B.
6. Answer the questions in English.
7. All answers MUST be written in the spaces provided in the paper.
8. Do NOT remove any page from this question paper.

FOR OFFICIAL USE ONLY (EXAMINER'S USE)

SECTION	SECTION A	SECTION B	% SCORE	EE1	EE2	ME1	ME2	AE1	AE2	BE1	BE2
SCORE RANGE	30 MARKS	50 MARKS		90-100	75-89	58-74	41-57	31-40	21-30	11-20	1-10
POINTS				8 POINTS	7 POINTS	6 POINTS	5 POINTS	4 POINTS	3 POINTS	2 POINTS	1 POINT
LEARNER'S TOTAL SCORE											

SECTION A (30 MARKS)

Answer ALL questions in this section.

1. A group of Grade 10 learners visited a forest to observe different organisms.

a) State **one characteristic** that all living organisms possess. **(1 mark)**

_____

_____

b) Give **two reasons** why Biology learners study organisms in their natural habitats. **(2 marks)**

i. _____

ii. _____

2. A learner accidentally left a prepared biological specimen exposed to high temperatures for several hours.

a) What is meant by **preservation of a specimen**? **(1 mark)**

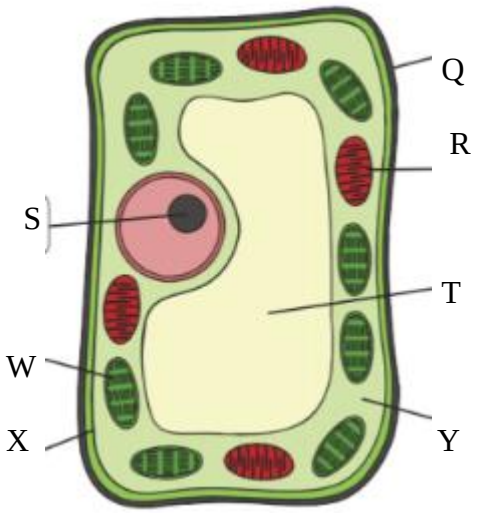
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_____

b) State **one method** of preserving a biological specimen. **(1 mark)**

_____

3. The diagram below represents a typical plant cell.



a) Name the structure that controls the activities of the cell. **(1 mark)**

_____

b) State **one function** of the cell wall. **(1 mark)**

_____

_____

c) Name the organelle responsible for photosynthesis. **(1 mark)**

_____

4. A student observed onion cells under a microscope.

a) Why was iodine solution added to the specimen? **(1 mark)**

_____

_____

b) State **one advantage** of using a stain when observing cells. **(1 mark)**

_____

_____

5. A learner tested a food sample using Benedict's solution and heated the mixture.

a) What food substance was being tested? **(1 mark)**

_____

_____

b) State the colour change that indicates a positive result. **(1 mark)**

_____

_____

6. A farmer watered a young maize plant adequately but kept it in complete darkness.

a) Explain why the plant could not manufacture enough food. **(1 mark)**

_____

_____

b) Name the green pigment required for photosynthesis. **(1 mark)**

_____

_____

7. Plants require mineral salts for healthy growth.

a) Name **one mineral element** required by plants. **(1 mark)**

_____

_____

b) State **one function** of the mineral element named in (a). **(1 mark)**

_____

_____

8. A learner noticed that water droplets disappeared from the surface of a leaf after several hours.

a) Name the process responsible for the loss of water vapour from leaves. **(1 mark)**

_____

_____

b) Through which structures does most water vapour leave the leaf? **(1 mark)**

_____

_____

9. During a football match, players breathe faster and their hearts beat more rapidly.

a) Why does the heartbeat increase during vigorous exercise? **(1 mark)**

_____

_____

b) State **one substance** transported in the blood from the lungs to actively respiring muscles. **(1 mark)**

_____

_____

10. A learner compared aerobic and anaerobic respiration.

a) Which type of respiration requires oxygen? **(1 mark)**

_____

_____

b) State **one product** of anaerobic respiration in human muscles. **(1 mark)**

_____

11. A balanced diet contains different nutrients in appropriate proportions.

a) Name **two vitamins** required by humans. **(2 marks)**

i. _____

ii. _____

b) State **one function** of vitamins in the body. **(1 mark)**

_____

_____

12. State **three differences** between diffusion and osmosis. **(3 marks)**

Diffusion	**Osmosis**

SECTION B: 50 MARKS

Answer all questions.

13. A Biology teacher gave learners a compound light microscope and a prepared slide containing plant cells.

a) Name the following microscope parts and state one function of each:

i. Eyepiece lens. **(2 marks)**

_____

_____

ii. Objective lens. **(2 marks)**

_____

_____

b) Describe how a learner should obtain a clear image of a specimen using a light microscope. **(3 marks)**

_____

_____

_____

_____

c) State **three precautions** that should be observed when using a microscope. **(3 marks)**

i. _____

ii. _____

iii. _____

14. Different cells in organisms have structures suited to their functions.

a) Explain the meaning of **cell differentiation**. **(2 marks)**

_____

_____

b) State **two adaptations** of a red blood cell for transporting oxygen. **(2 marks)**

i. _____

ii. _____

c) Explain how each of the following processes occurs:

i. Crenation. **(2 marks)**

_____

_____

_____

_____

ii. Haemolysis. **(2 marks)**

_____

_____

_____

_____

d) State **two factors** that affect the rate of diffusion. **(2 marks)**

i. _____

ii. _____

15. A school canteen introduced a menu consisting of ugali, beans, vegetables, fruit and milk. The Biology teacher asked learners to identify the nutrients provided by the meal.

a) State the main function of each of the following nutrients:

i. Carbohydrates. **(1 mark)**

_____

_____

ii. Proteins. **(1 mark)**

_____

_____

iii. Fats and oils. **(1 mark)**

_____

_____

b) Explain why water is important in the human body. **(2 marks)**

_____

_____

_____

_____

c) Describe how you would test a food sample for **starch** in a laboratory. **(3 marks)**

_____

_____

_____

_____

d) State **two consequences** of consuming an unbalanced diet for a long period. **(2 marks)**

i. _____

ii. _____

16. A farmer noticed that some maize plants had yellow leaves and poor growth despite receiving enough water.

a) Explain how a deficiency of mineral salts can affect plant growth. **(2 marks)**

_____

_____

b) Describe the role of **xylem tissue** in a plant. **(3 marks)**

_____

_____

c) Explain how water moves from the soil into a root hair cell. **(2 marks)**

_____

_____

d) State **three factors** that can affect the rate of transpiration. **(3 marks)**

i. _____

ii. _____

iii. _____

17. A group of learners investigated breathing before and after running. They recorded the following observations:

Condition	Breaths per minute
Before running	18
Immediately after running	32
Five minutes after running	24

a) Calculate the increase in breathing rate immediately after running. **(1 mark)**

b) Explain why breathing rate increased after running. **(3 marks)**

i. _____

ii. _____

iii. _____

c) Distinguish between **gaseous exchange** and **respiration**. **(2 marks)**

_____

_____

_____

_____

d) State **two adaptations** of the alveoli that make them efficient for gaseous exchange. **(2 marks)**

i. _____

ii. _____

e) Give **two reasons** why breathing rate gradually returns towards normal after exercise. **(2 marks)**

i. _____

ii. _____

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