KENYA CERTIFICATE OF BASIC EDUCATION (K.C.B.E)

GRADE 10 BIOLOGY TERM 1 MARCH 2026

PATHWAY: S.T.E.M

Time: 2Hours 30 Minutes

COMPETENCE ASSESSMENT EXAMINATION CKEAB 003

LEARNER'S DETAILS

Name: _____

School: _____

Assessment Number: _____ **Date:** _____

School Code: _____ **Signature**: _____.

INSTRUCTIONS TO LEARNERS

1. Write your name, assessment number, class and date on all the answer sheets provided.
2. Answer all the questions in the spaces provided.
3. Use a blue or black pen for writing. Pencils should be used only for drawings and diagrams.
4. Make your drawings neat, clear, and large, and label them correctly using ruled lines.
5. **SCORE GRID**

No.	Question Area	Maximum Marks	Learner's Score	Performance Level
1	Introduction to Biology & Careers	10		
2	Biodiversity & Specimen Collection	15		
3	Microscope & Cell Structure	20		
4	Cell Structure, Specialisation & Adaptation	18		
5	Chemicals of Life & Enzymes	9		
6	Enzymes & Importance of Water	8		
7	Digestive & Cellular Enzymes	6		
8	Catalase Enzyme Experiment	11		
9	Photosynthesis	13		
	TOTAL	**90**		

Performance Levels Grid

Level	Level	% Range	Points	Learner's score
Exceeding (EE)	EE1	90–100%	8	
	EE2	75–89%	7	
Meeting (ME)	ME1	58–74%	6	
	ME2	41–57%	5	
Approaching (AE)	AE1	31–40%	4	
	AE2	21–30%	3	
Below (BE)	BE1	11–20%	2	
	BE2	1–10%	1	

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SECTION A: THEORY (90 Marks)

Answer all questions in this section.

1. A career guidance teacher invited learners to explore how Biology influences everyday life and future careers.

a) Mention two main branches of Biology. (2 marks)

i. _____

ii. _____

b) Explain **TWO applications of Biology** in everyday life. (2 marks)

i. _____

ii. _____

iii. _____

iv. _____

c) Match each **field of Biology** with a suitable **career**. (4 marks)

Field of Biology	**Career**
Botany	
Microbiology	
Genetics	
Ecology	

d) State **TWO factors** that should positively influence career choice in Biology. (2 marks)

i. _____

ii. _____

2. Learners carried out a biodiversity study in their local environment.

a) Identify **the apparatus** used to collect small animal specimens shown below. (2 marks)

S **T**

S: _____ T: _____.

b) Other than the ones identified in (2.(a)) above, Identify **TWO other apparatus** used to collect small animal specimens. (2 marks)

i. _____

ii. _____

c) Describe **THREE steps** followed when preparing a plant specimen for a herbarium. (3 marks)

i. _____

ii. _____

iii. _____

d) Give **THREE reasons** why specimen collection and preservation are important in Biology. (3 marks)

i. _____

ii. _____

iii. _____

3. A learner used a **light microscope** during a Biology practical lesson.

a) Complete the table below by stating the use of each part of the microscope. (4 marks)

Part of the Microscope	**Use**
Eyepiece lens	
Objective lens	
Diaphragm	
Coarse adjustment knob	

b) State **THREE differences** between a light microscope and an electron microscope. (6 marks)

	Light microscope	Electron microscope
i		
ii		
iii		

c) Name **the cell organelles labelled A, B, C and D**. (4 marks)

A: _____

B: _____

C: _____

D: _____

c) State the function of the following cell organelles. **(2 marks)**

Cell Organelle	Function
Cytoplasm	
Smooth endoplasmic reticulum	

4. Cells are adapted to perform specific functions.

a) State **FOUR differences** between plant and animal cells. (4 marks)

	Plant cell	***Animal cell***
i		
ii		
iii		
iv		

c) Identify the specialized animal or plant cell that performs each of the following functions.(6 marks)

	Function	**Specialised Cell**
i	Transports oxygen in the body	
ii	Absorbs water and mineral salts from the soil	
iii	Transmits electrical impulses in the body	
iv	Carries out photosynthesis efficiently	
v	Controls opening and closing of stomata	
vi	Enables movement by contraction	

b) **State the ways in which the following cells are adapted to their functions.**

i) Root hair cell (1 mark)

_____

_____

ii) Red blood cell (1 mark)

_____

_____

5. Learners tested food substances in a school laboratory.

a) Name **TWO classes of chemicals of life** found in cells. (2 marks)

i. _____

ii. _____

b) Describe **ONE test** used to detect each of the following: (3 marks)

i) Starch: _____.

ii) Proteins: _____.

iii) Lipids: _____.

c) State **TWO factors** that affect enzyme activity. (2 marks)

i. _____

ii. _____

6. Catalase enzyme was tested using liver tissue.

a) Define the term **enzyme**. (2 marks)

_____

_____

b) Explain **TWO roles of enzymes** in living cells. (2 marks)

i. _____

ii. _____

c) State **TWO importance of water** in cells. (2 marks)

i. _____

ii. _____

7. Complete the table below by identifying the enzyme that performs each function. (6 marks)

	Function of Enzyme	**Name of Enzyme**
i	Breaks down hydrogen peroxide into water and oxygen	
ii	Breaks down starch into maltose	
iii	Breaks down proteins into amino acids	
iv	Breaks down fats (lipids) into glycerol and fatty acids	
v	Breaks down lactose into glucose and galactose	
vii	Breaks down RNA into nucleotides	

8. A learner conducted an experiment to investigate the **action of catalase enzyme** in living tissues.

Two test tubes, **A** and **B**, were set up as shown below:

i. Test tube **A** contained **fresh liver pieces** and **hydrogen peroxide**.

ii. Test tube **B** contained **boiled liver pieces** and **hydrogen peroxide**.

The learner observed that **bubbles of gas were produced in test tube A**, but **no bubbles were observed in test tube B**.

a) Name the **gas** produced in test tube A. (1 mark)

_____.

b) Identify the **enzyme** present in the liver tissue. (1 mark)

_____.

c) Explain why bubbles were observed in test tube A but not in test tube B. (2 marks)

_____

_____

_____

_____

d) State **TWO conclusions** that can be drawn from this experiment. (2 marks)

i. _____

ii. _____

e) Give **TWO precautions** that should be taken to ensure reliable results in this experiment. (2 marks)

i. _____

ii. _____

9. Plants obtain nutrients in different ways.

a) Describe **TWO structural features of the chloroplast** related to its function. (2 marks)

i. _____

ii. _____

b) Photosynthesis takes place in two stages. Name the part of the chloroplast where the light stage occurs. (1 mark)

_____.

c) How is the dark stage dependent on the light stage of photosynthesis? (2mks)

_____

_____

b) State **TWO importance of photosynthesis** in nature. (2 marks)

i. _____

ii. _____

c) Differentiate between the **light stage** and **dark stage** of photosynthesis. (2 marks)

_____

_____

_____

_____

b) State **TWO factors** affecting the rate of photosynthesis. (2 marks)

i. _____

ii. _____

c) Write the **word equation** for photosynthesis. (2 marks)

_____

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