

NAME \_\_\_\_\_  
SCHOOL \_\_\_\_\_

INDEX NO. \_\_\_\_\_  
SIGNATURE \_\_\_\_\_  
DATE \_\_\_\_\_

231/3  
BIOLOGY  
PAPER 3  
(PRACTICAL)  
TIME: 1¼ HOURS

# Revision Kits 2024

## FOCUS A365

Another Manyamfranchise.Com Evaluation Test

Kenya Certificate of Secondary Education (K.C.S.E)

### INSTRUCTIONS TO CANDIDATES

1. Write your name, school and index number in the spaces provided above.
2. Write the date of examination and sign in the spaces provided above.
3. Answer **ALL** the questions in the spaces provided.
4. You are required to spend the first 15 minutes of the 1¼ allowed for this paper reading the whole paper carefully before commencing your work.
5. Additional pages must not be inserted

### FOR EXAMINER'S USE ONLY

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1	16	
2	12	
3	12	
TOTAL SCORE	40	

*This paper consists of 4 printed pages.*

*Candidates should check to ensure that all pages are printed as indicated and no questions are missing*

Turn Over

1. You are provided with an onion bulb, solution X, solution Y and other apparatus. Cut four equal pieces of an onion skin from the fleshy inner parts. Take two pieces and place one into solution X and the other into solution Y respectively. Slice the other two pieces longitudinally making sure that the slices remain joined together at one end.

Put one piece in solution X and the other into solution Y. Allow the pieces to remain in the solution for 30 minutes. Remove the pieces and feel their surfaces.

- a)  
i) Record your observations in the table below. (4 marks)

Pieces in solution X	Observation	Pieces in solution Y	Observation
Un sliced piece		Un sliced piece	
Sliced piece		Sliced piece	

- ii) Name the physiological process demonstrated in this experiment. (1 mark)

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- b) Account for the observations made.

- i) The unsliced pieces (2 marks)

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- ii) Sliced pieces (2 marks)

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- c) Suggest the concentration of solution X and Y giving reasons to support your answer. (4 marks)

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- d) How does the slicing of the pieces compare with presence of villi in the intestines? (2 marks)

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- e) State a control for the above experiment. (1 mark)

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2. The following photograph shows the articulation of bones of hippopotamus observed by students who visited Tsavo West national park. Study the photo and answer the questions that follow.

**PHOTOGRAPH MISSING**

- a) i) Name the type of bone shown in the photograph. (1 mark)

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- ii) Give a reason for your answer above. (1 mark)

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- b) Name the parts labelled A, B and D. (3 marks)

A \_\_\_\_\_

B \_\_\_\_\_

D \_\_\_\_\_

- c) Name the tissue found in the part labelled C and state its function. (2 marks)

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- d) State **two** reasons in each case why support is necessary in:

- i) Animals (2 marks)

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- ii) Plants (2 marks)

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- e) Which type of mammalian muscle is involuntary? (1 mark)

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3. You are provided with substance labelled P, Q, M, N and Z. P and Q are food substances, while M is dilute hydrochloric acid, N is dilute sodium hydrogen carbonate and Z is Benedicts' solution. Carry out the tests to determine the food substances present in P and Q. Fill in the table below. (12 marks)

Substance	Food substance	Procedure	Observations	Conclusion
P				
Q				

**MARKING SCHEME****231/3****BIOLOGY****PAPER 3****PRACTICAL****MARKING SCHEME**

1. a) i)

Pieces in solution X	Pieces in solution X
Un sliced piece was hard/firm and tough;	Un sliced piece was soft/ fluffy
Sliced piece was extra hard;	Sliced piece was sticky;

ii) Osmosis;

b) i) Sliced pieces have larger surface area; and so they absorb or lose water faster; use of comparative terms

ii) Un sliced pieces have a smaller surface area; so they absorb or lose water at slower rate; use of comparative terms

c) X – hypotonic; to solution in the onion skin cells

**Reason:** onion pieces took up water by osmosis from solution X and cells become turgid/firm;

Y – hypertonic; to solution in the onion cells

**Reason:** onion cells lost water by osmosis making cells flaccid/soft;

d) Increase in surface area for absorption of substances;

e) Boiling the onion pieces;

2. a) i) Thoracic vertebrae; rej thoracic bone

ii) Presence of long neural spine/Short transverse process;

b) A – Neural spine;

B – Transverse process;

D – Centrum;

c) Intervertebral disc;

**Function:** Has cartilage to absorb shock/reduce friction/allow flexibility;

d) i) - Exposes surface area of leaf to sunlight and carbon (IV) oxide for photosynthesis;

- Exposes flower for pollination;

- Exposes fruit/seeds for dispersal

- To resist breakage;

*(Any two)*

ii) Maintain body shape

Enable movement/locomotion

Protect delicate surface for attachment of body organs/muscles to facilitate movement.

e) Smooth muscle; cardiac muscle (*any two*)

### 3. Food test

Substance	Food substance	Procedure	Observation	Conclusion
Q	Reducing sugars	To 1ml of Q add 1ml of benedict's solution and boil;	Blue colour of benedicts solution remains	Reducing sugars absent
	Non – reducing sugars	To 1ml add 3 drops of dilute HCl and boil for 5minutes. Allow to cool and add NaHCO <sub>3</sub> until fizzling stops, followed by 1ml of benedict's solution and boil;	Green, yellow to orange brown;	Non – reducing sugars present after hydrolysis;
P	Reducing sugar	To 1ml of P add equal amounts of benedict's solution and boil;	Green yellow orange brown	Reducing sugars present;
	Non- reducing sugars	To 1ml of P add 3 drops of dilute HCl and boil for 5 minutes. Allow to cool then naHCO <sub>3</sub> until fizzling stops followed by 1ml of benedict's and boil;	Green yellow to orange brown	Non – reducing sugars present;

231/3

**BIOLOGY**

**PAPER 3**

**PRACTICAL**

# **CONFIDENTIAL**

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## **INSTRUCTIONS TO SCHOOLS**

1. The information contained in this paper is to enable the head of school and the teacher in charge of Biology to make adequate preparations for this Biology Practical examination. **NO ONE ELSE** should have access to this paper or acquire knowledge of its contents. Great care **MUST** be taken to ensure that the information here does not reach the candidates either directly or indirectly.
2. The **Biology teacher** should note that it is his / her responsibility to ensure that each apparatus acquired for this examination agrees with the specifications given.
3. The question paper will not be opened in advance.

***Each candidate should have the following requirements:-***

- Onion bulb
- Distilled water in a beaker labelled solution X
- Concentrated salt/sugar solution in a beaker labelled solution Y
- Blade/razor blade
- Means of timing/clock etc.
- Water in wash bottle.
- 10ml of glucose solution in a test tube labelled solution P
- 10ml of sucrose solution in a test tube labelled solution Q
- 5ml dilute HCl labelled solution M in a beaker / test tube
- 10ml sodium hydrogen carbonate in a beaker/ test tube labelled solution N
- Benedict solution labelled Z in a beaker
- Source of heat
- At least two test tubes in a test tube rack

***N.B***

***Candidates can have access to***

1. Benedict's solution
2. Sodium hydrogen carbonate
3. Means of heating