Name_____ Index No. _____

Candidate's signature _____

Date _____

Biology Practical Marking scheme

231/3
BIOLOGY
PAPER 3
PRACTICAL
1 ¾ HOURS

FORM 4 SUKELLEMO JOINT PRE-MOCK EXAMS 2023
Kenya Certificate of Secondary Education (K.C.S.E)

INSTRUCTIONS TO CANDIDATES

Answer ALL the questions in the spaces provided in the question paper.
You are supposed to spend the first 15 minutes to read the whole paper carefully before commencing your work.

FOR EXAMINERS USE ONLY

Questions	Total marks	Candidates score
1	~~12~~ 16.	
2	~~17~~ ~~14~~ 13	
3	11	
Total score	40	

This paper consists of 5 printed pages
Turn Over

1. You are provided with solution labelled L, a piece of visking tubing, some string, four test tubes, a beaker a white tile and these reagents iodine solution and Benedict's solution.

(a) Using the appropriate reagents, carry out food tests to identify the food substances contained in L. Outline procedure used and record your observation and conclusions in the table below. (6 marks)

Food substance	Procedure	Observations	Conclusion
Starch	Put 2cm³ of solution L in a test-tube add two drops of iodine solution	Colour change from brown/yellow to blue-black	Starch present
Reducing sugars	Put 2cm³ of solution L in a test tube Add equal amount of Benedicts solution Heat to boil	Colour changes from blue to green to yellow to orange/brown	Reducing sugars present

Securely tie one end of the visking tubing with the string and place solution L into it until it is about ¾ full. Ensure that it is not leaking and tie up the other end securely. Wash away all traces of solution L from the outside of the visking tubing. Place the visking tubing in the beaker and submerge in distilled water. Note the time and allow the set up to stand for at least 30 minutes. After 30 minutes take some of the water from the beaker and carry out similar food tests on it.

(b) Record your observation and conclusions in table below. (4mks)

Food substance	Procedure	Observations	Conclusion
Starch	Put 2cm³ of water from the beaker in a test-tube Add two drops of iodine solution	Yellow/Brown colour	Starch absent
Reducing sugars	Put 2cm³ of water from the beaker in a test-tube Add equal amount of Benedict's solution Heat to boil	Colour changes from blue to green to yellow to orange/brown	Reducing sugars present

(c) Account for the results obtained (a) and (b) (3 marks)

visking tubing is semi permeable; selectively permeable allowing small molecules of reducing sugar to pass through but not large molecules of starch!

(d) What physiological process is demonstrated by this experiment? (1 mark)

Or Diffusion

(e) (i) Name **one** part of the body where a similar process takes place. (1 mark)

Lungs | Alveolus

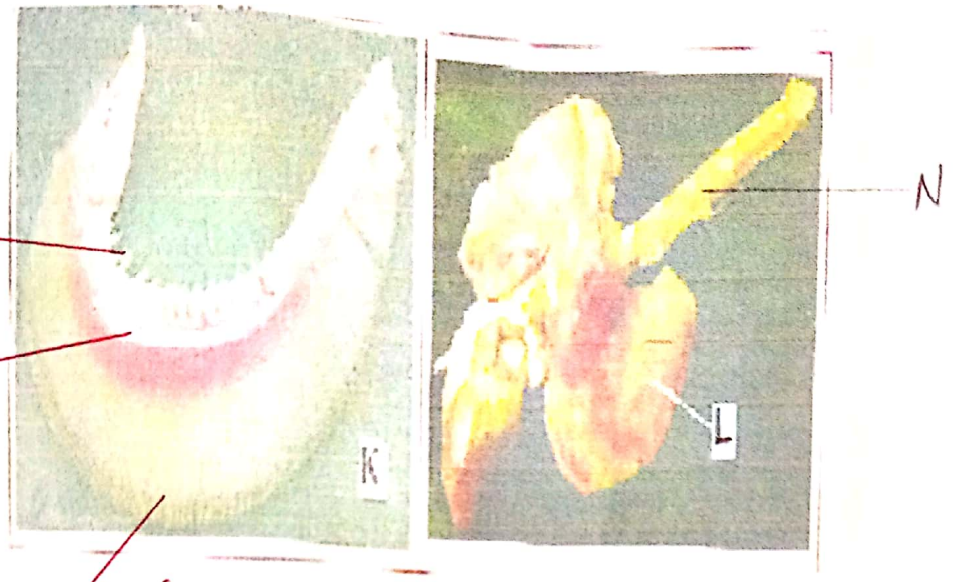
ileum | villus

proximal convoluted tubule

(ii) What is the process you have named in e(i) above called? (1 mark)

Gaseous exchange, Absorption, selective Reabsorption

Q2. You are provided with photographs of specimens labeled K and L. examine them and answer the questions that follow.



(a) Identify each specimen and name the class of the organism from which they were obtained. (2mks)

Specimen	Identity	Class
K	Gill	Pisces
L	Lung	Mammalia, Amphibia, Reptilia, Aves

(b) Label all the parts of specimen K, on the photograph. (3mks)

(c) State the functions of each of the parts you have labeled in (b) above. (3mks)

Gill bar - supports gill filaments & gill rakers | attachment of gill filaments & gill rakers.

Gill raker - prevent entry of solid particles into the gill filament

Gill filament - site for exchange of respiratory gases.

two

(d) State ~~three~~ ways in which the part labeled L is adapted to its functions. (3mks) (2mks).

Elastic to accomodate varied volume of air

numerous alveoli to increase SuA for gaseous exchange

(e) State the functional relationship between

(i) Specimen K and L (1mk)

Both are used for gaseous exchange

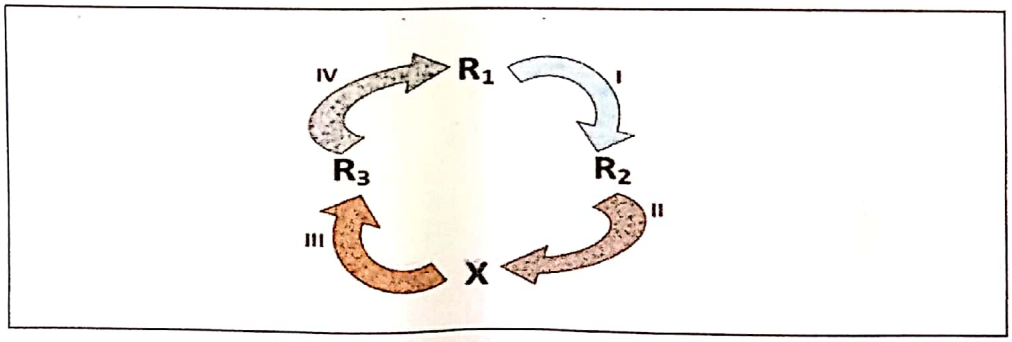
(ii) State two adaptations of the part labeled N to its function. (2mks)

Has cilia to waft mucus containing dust particles away from lungs

Rings of cartilage to keep ~~them~~ trachea open / to prevent it from collapsing

Q3. You are provided with specimens labeled R1, R2 and R3 representing different stages of plant development. Study the specimens carefully and answer questions related to them.

a. The chart below shows relationship between the specimens



I) Identify process 1 (1mark)

Germination

II) state one internal and one external condition necessary for the process identified in (1) above (2 marks)

Internally; Embryo maturity, sufficient hormones & enzymes/ viability

Externally; optimum temperature / water / oxygen

III) Name the:

Stage of development R2 (2 marks)

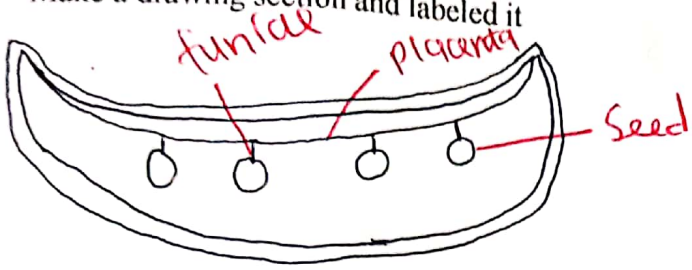
Seedling

Process immediately before R3 in process (III)

Double fertilisation

b. Dissect specimen R3 logitudinally and open it out

I) Make a drawing section and labeled it (4 marks)



Drawing – 2
D_1 – Continuous double outline
D_2 – Atleast 3 seeds attached by funicle
L – 2 any 2.

II) Explain two adaptations of the specimen to its function (2marks)

Seeds: dispersed for propagation of the plants

pericarp: protection of immature seeds

*lines of weakness/sutures open up when R3 matures & dries.