

NAME: INDEX NO:

SIGNATURE: DATE :

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY / AUGUST 2013
TIME: 2 HOURS

NANDI NORTH DISTRICT JOINT MOCK EVALUATION TEST 2013

Kenya Certificate of Secondary Education (K.C.S.E.)
BIOLOGY
PAPER 2
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

- (a) Write your **Name** and **Index Number** in the spaces provided.
- (b) **Sign** and write the **Date** of examination in the spaces provided.
- (c) This paper consists of TWO sections A and B.
- (d) Answer all questions in section A in the spaces provided.
- (e) In section B, answer question 6 (compulsory) and either question 7 or 8 in the spaces provided.

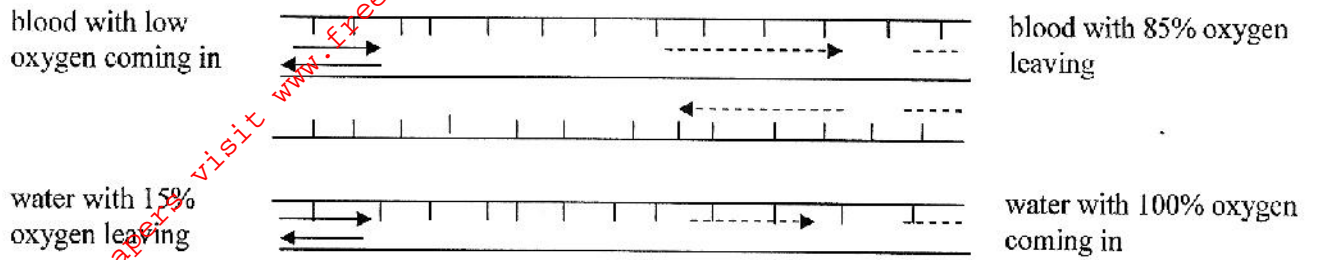
FOR EXAMINER'S USE ONLY

SECTION	QUESTION	MAX. SCORE	CANDIDATE SCORE
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	TOTAL	80	

SECTION A (40 MARKS)

Answer all questions in this section in the spaces provided.

1. The diagram below shows how gaseous exchange occurs across the gills of a fish.



(a) From the diagram above, water and blood flow in opposite direction.

(i) Give the term used to describe this type of flow. (1mk)

.....

(ii) Explain the significance of this type of flow. (2mks)

.....
.....
.....

(b) Name **two** organs in human beings that display the flow system named in (a) (i) above. (2mks)

.....
.....

(c) Explain why the gills of a fish are:

(i) Highly vascularised. (1mk)

.....
.....

(ii) Thin walled (1mk)

.....
.....

(iii) Moist (1mk)

.....
.....

2. A pea plant with round seeds was crossed with a pea plant that had wrinkled seeds. The gene for round seeds is dominant over that for wrinkled seeds. Using letter R to represent the dominant gene state:

(a) The genotype of parents if plant with round seed was heterozygous. (2mks)

.....

(b) The gametes produced by the round and wrinkled seed parents:-

Round seed parent (1mk)

.....

Wrinkled seed parent. (1mk)

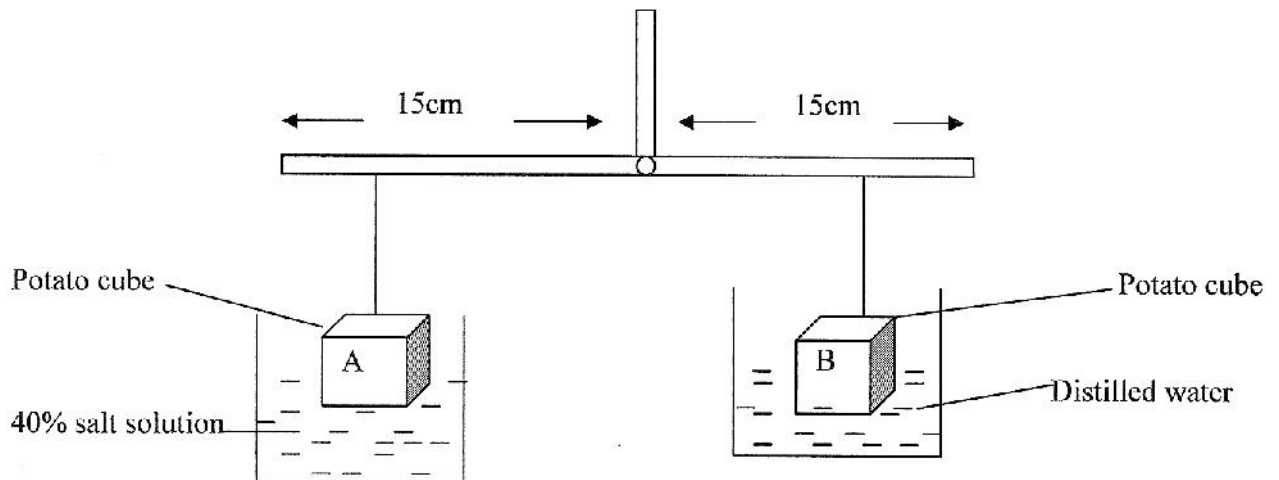
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(c) The genotype and phenotype of F₁ generation. Show your working. (3mks)

(d) What is a test-cross? (1mk)

.....

3. A student set up an experiment to investigate a certain process. Study it and answer the questions that follow. The cubes are of the same size and shape.



(a) (i) Name the process being investigated. (1mk)

.....
(ii) What observations would be made after 40 minutes? (2mks)

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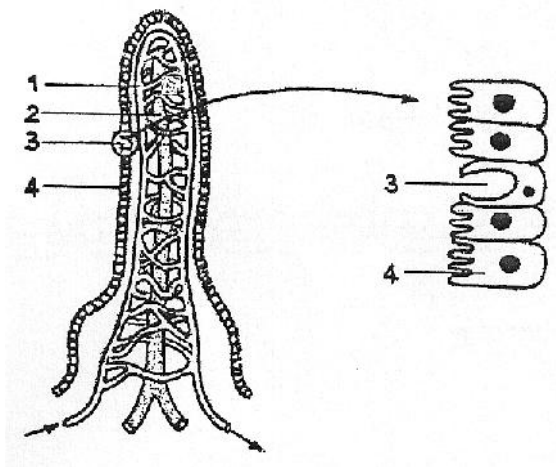
(b) Account for your observation. (4mks)

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.....

(c) Suggest a control experiment for this experiment. (1mk)

.....

4. The diagram below represents a villus.



(a) (i) State the roles of the following structures in the villus: (2mks)

Capillary:.....

Lacteal:

(ii) The epithelial cells, one of which is shown enlarged on the figure have microvilli on their exposed surface. Suggest an advantage of these microvilli to the epithelial cells. (1mk)

.....

(b) (i) Name the process by which the products of digestion, present in high concentrations in the ileum, would pass into the capillaries. (1mk)

.....

(ii) Describe how the capillaries are adapted to allow this process to happen efficiently. (2mks)

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.....

(c) Some substances are absorbed into the capillaries by active uptake.

(i) Explain why active uptake is sometimes necessary. (1mk)

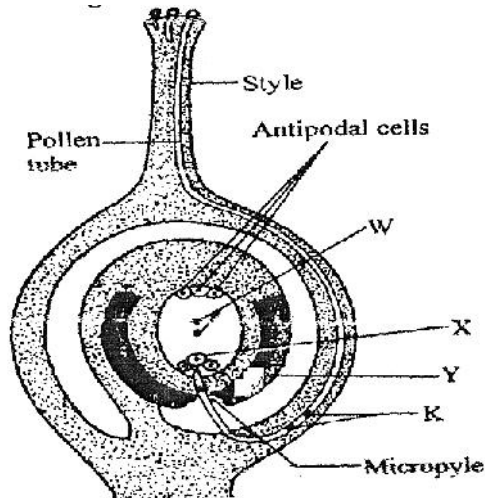
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(ii) Suggest why active uptake stops when the epithelial cells of the ileum are exposed to a respiratory poison. (1mk)

.....

.....

5. The diagram below shows a cross section through the female part of a flower.



(a) Name the structures labeled W, X and Y. (3mks)

X:.....

Y:.....

Z:.....

(b) State **two** functions of the pollen tube. (1mk)

.....

.....

(c) What happens to antipodal cells after fertilization? (1mk)

.....

.....

(d) What does semi-permeable membrane represent in an animal cell (1mk)

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(e) Name the structure labeled K and state their role. (2mks)

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SECTION B

Answer question 6 (Compulsory) and any other one question from this section.

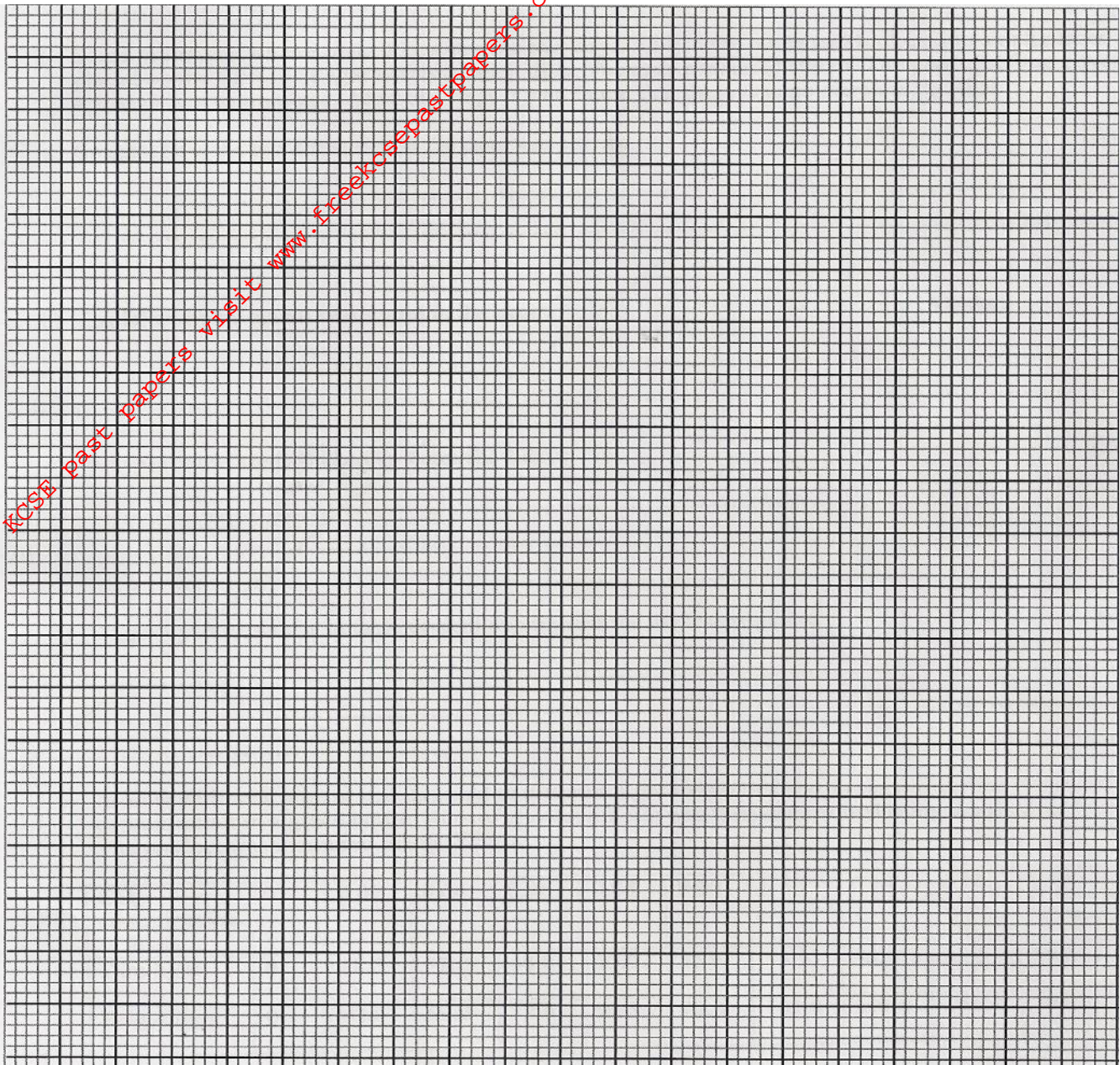
6. In an experiment, a plant was exposed to different light intensities and a range of carbon (IV) oxide concentration in a green house. Rate of photosynthesis was then determined using the product formed. The product was measured in mg-sec(s).

CO ₂ concentration in air %	0	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
Dim light	0	28.5	37.0	44.0	50.0	55.0	55.5	55.5	55.5	55.5	55.5
Bright light	0	42.0	59.0	77.0	90.5	98.0	101.0	101.0	101.0	101.0	101.0

- (a) Plot a graph of rate of photosynthesis against carbon (IV) oxide concentration.

(7mks)

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(b) (i) At what interval of carbon (IV) oxide was the rate of photosynthesis determined? (1mk)

.....

(ii) The amount of carbon (IV) oxide in the atmosphere air is about 0.03%. What was the rate of photosynthesis at this concentration in dim light? (1mk)

.....

(c) Suggest the factors which was limiting the rate of photosynthesis between 0.12 and 0.20% carbon (IV) oxide in:

(i) Dim light. (2mks)

.....

.....

(ii) Bright light. (2mks)

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.....
(d) (i) Explain the advantages of the leaf being broad and flat. (2mks)

.....
.....
(ii) What is the fate of excess products of photosynthesis? (2mks)

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.....
(e) Describe how photosynthesis theory accounts for changes on stomata rhythm during the day. (5mks)

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7. (a) Explain why plants lack elaborate excretory organs like those found in animals. (3mks)

(b) Name **five** methods of excretion in plants. (5mks)

(c) State any **six** excretory products in plants and give economic uses. (12mks)

8. How is the human eye adapted to its function? (20mks)

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