

NAME: _____ Index No: _____

SCHOOL: _____ DATE: _____

SIGNATURE: _____ CLASS: _____ ADM NO: _____

231/2

BIOLOGY PAPER 2 {THEORY}

TIME: 2 HOURS



KCSE ACHIEVERS PREDICTION



Kenya Certificate of Secondary Education

INSTRUCTIONS TO CANDIDATE:

- Write your name and index number in the spaces provided above.
- This paper consists of two sections; A and B.
- Answer ALL the questions in section A in the spaces provided.
- In section B, answer questions 6 (compulsory) and either questions 7 or 8 in the spaces provided after question 8.

For Examiner's use only

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE SCORE
A	1	8	
	2	8	
	3	8	
	4	8	
B	5	8	
	6	20	
	7	20	
	8	20	
	TOTAL SCORE	80	

SECTION A(40 MARKS)



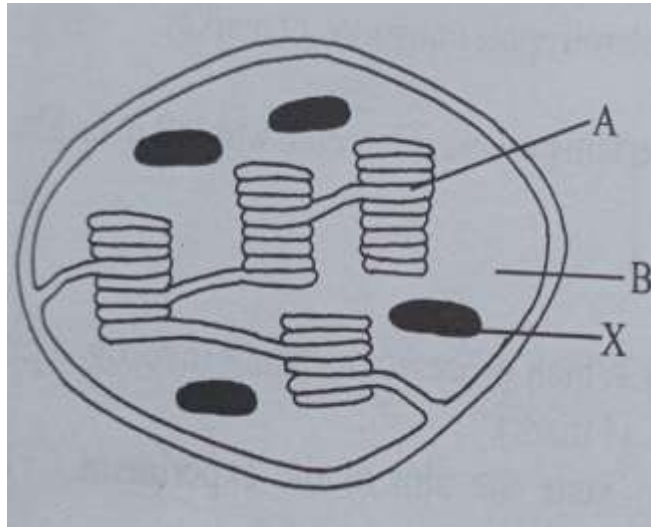
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Turn over

1. The diagram below represents a plant cell organelle;



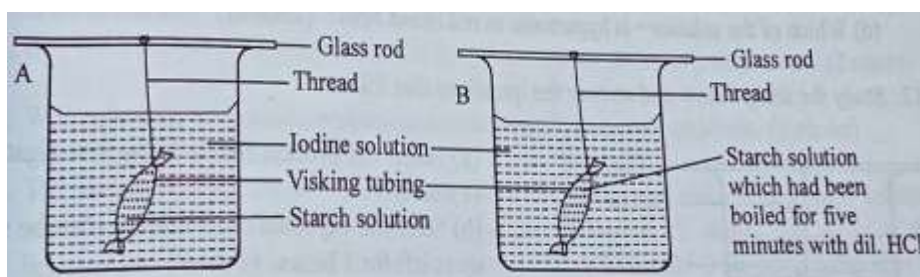
- a) Name the organelle (1mk)
- b) In which of the labeled parts does carbon(IV)oxide fixation occur? (1mk)
- c) Name the parts labeled A and B and state how each is adapted to its function(4mks)
- A

B



- d) Explain what would have happened to the structure labeled X had the plant been kept in darkness for 48 hours (2mks)

2. A group of students set up an experiment as shown below. The experimental set ups were left for 20 minutes.



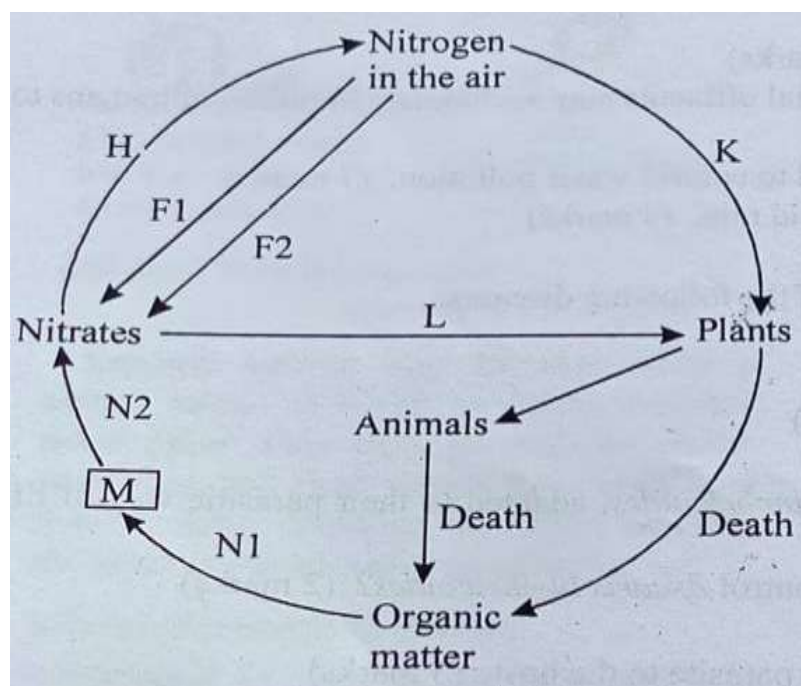
The observation after 20 minutes were as shown in the table below;

Set up	Observations	
	Inside tubing	Outside tubing
A	Blue black colour	Colour of iodine
B	Colour of iodine	Colour of iodine

- a) State the process being demonstrated in this experiment. (1mk)
- b) Explain the results in set up A; (4mks)
- c) Why was there no blue black colour inside the visking tubing in set up B; (2mks)



3. The diagram below represents the nitrogen cycle;



a) Name the process labeled; (2mks)

i) L

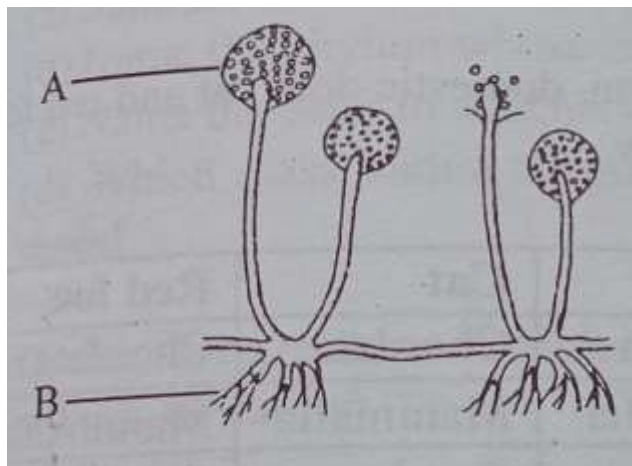
ii) N₁ and N₂

b) Name the organisms that convert M into nitrates. (1mk)



- c) Name the organism in plants which promotes process K(1mk)
- d) State the relationship between the organisms stated in (c) above and the plant;(1mk)
- e) How would excess pesticides in the soil interfere with process K;(2mks)
- f) If F_1 is nitrogen fixation by free-living bacteria, F_2 is nitrogen fixation by what? (1mk)

4. The diagram below shows a mould of the genus *Rhizopus*;



- a) Name the kingdom to which it belongs; (1mk)
- b) Name the structures labeled A and B (2mks)
 - A
 - B



- c) Give the functions of the structure labeled B (2mks)
- d) How do the structures labeled B differ from plant roots(1mk)
- e) Give two ways in which members of the kingdom you stated in (a) above are useful to man. (2mks)
5. (a) Name the two types of variations. (2mks)
- (b) In a garden with pea plants, 625 plants had tall stems while 205 had short stems in the F₂ generation;
- i) Work out the ratio of tall to short plants (give your answer correct to the nearest whole number) (1mk)
- ii) Using letter T to represent the dominant gene, work out a cross between an F₁ offspring and a short plant. (4mks)



- iii) What is the genotypic ratio from the cross in b (ii) above (1mk)

SECTION B:

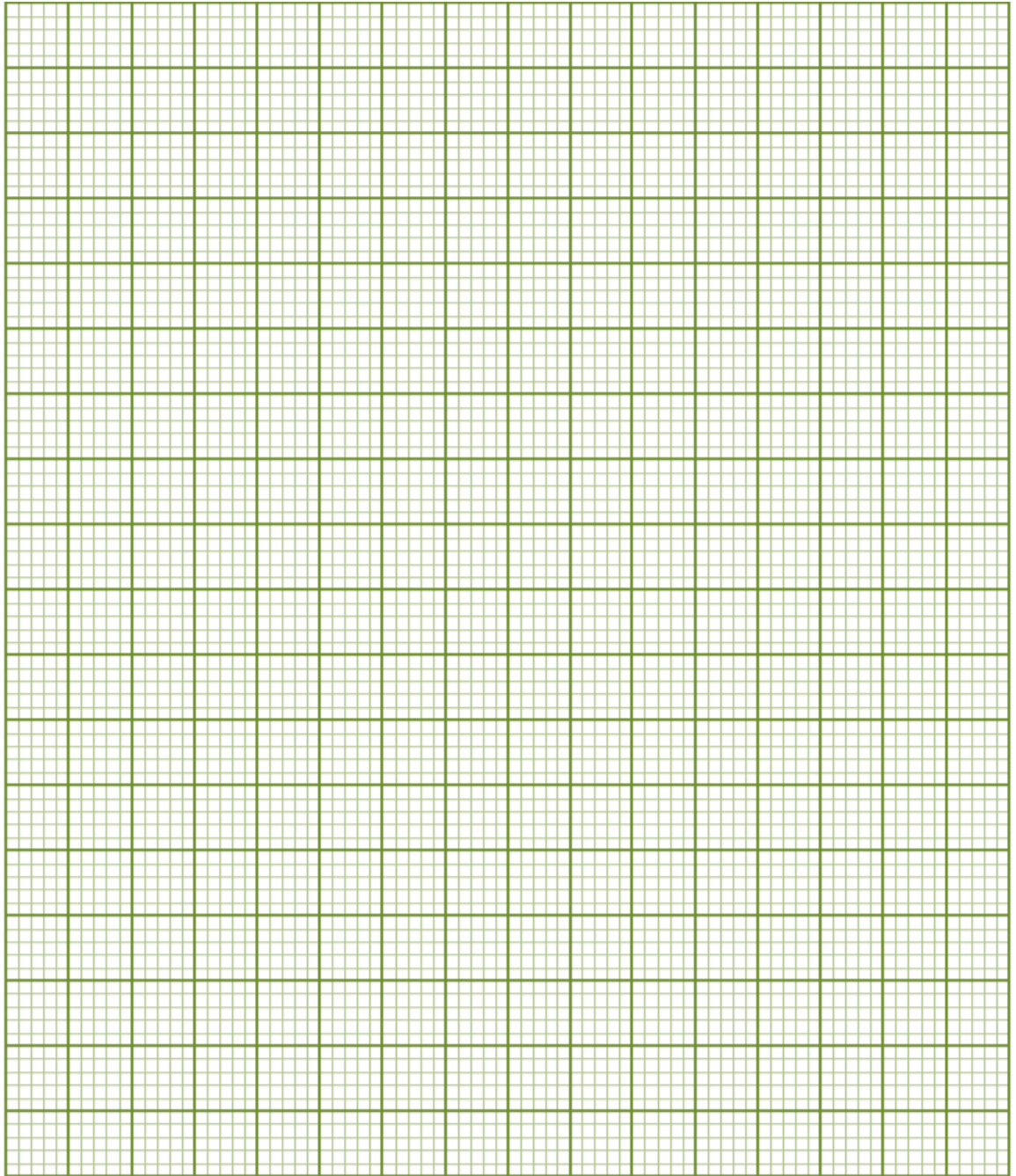
Answer question 6 (compulsory and either question 7 or 8 in the spaces provided after question 8:

6. An experiment was carried out to investigate transpiration and absorption of water in a certain plant species. The plants were potted and supplied with adequate water. The amount of water lost and absorbed was determined. The results are shown in the table below;

Time of the day	Amount of water in grams	
	Transpiration	Absorption
0700-0900	30	15
0900-1100	40	25
1100-1300	48	34
1300-1500	56	45
1500-1700	40	50
1700-1900	25	40
1900-2100	15	28
2100-2300	10	21

- a) Using the same axes, plot graphs to show transpiration and absorption of water in grams against time of the day. (7mks)





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Turn over

- b) At what time of the day was the amount of water the same for transpiration and absorption;(1mk)
- c) Explain the shape of the graphs of:-
- i) Transpiration (3mks)
 - ii) Absorption (3mks)
- d) Suggest what would happen to transpiration and absorption of water if the experiment was continued for another 2 hours; (2mks)
- e) Name two factors and explain how they would affect transpiration and absorption at any given time. (4mks)
7. (i) Describe the process of fertilization in flowering plant. (10mks)
- (ii) How is the human male reproductive system adapted to its functions? (10mks)
8. (i) Explain the methods of excretion in plants. (10mks)
- (ii) Explain how the nephron is adapted to its functions. (10mks)

