231/2
BIOLOGY
Paper 2
2 Hours

PRECIOUS BLOOD SCHOOL
MOCK EXAM

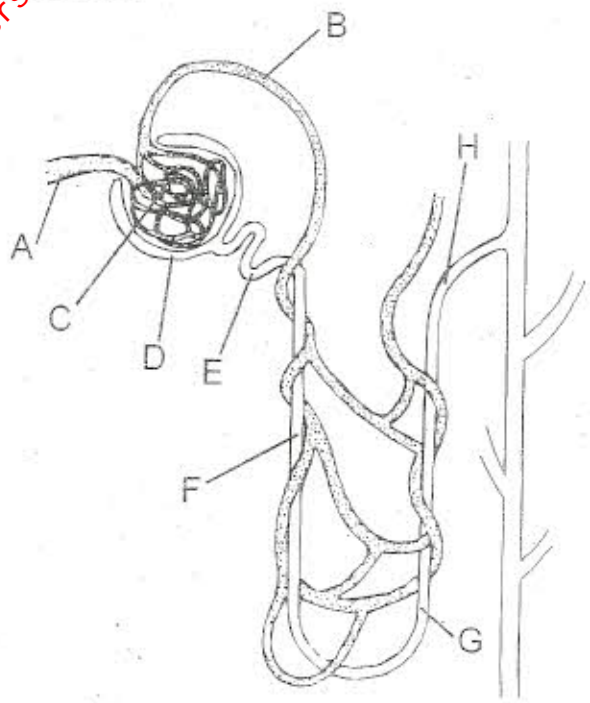
INSTRUCTIONS TO CANDIDATES

- This paper contains **TWO** sections, **A** and **B**.
- Answer all questions in section **A** in the spaces provided.
- In section **B**, answer question **6** and either question **7** or **8** on the spaces provided.

FOR EXAMINER'S USE ONLY.

Section	*Question*	*Max. Scores*	*Candidate's Score*
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
Total Marks		**80**	

1. The diagram below represents a nephrone of a mammalian kidney. Study the diagram and answer the questions that follow.



a) Name the parts labelled. (3 marks)

A .....

D .....

G .....

b) Give the letters representing the two structures between which ultrafiltration takes place. (2 marks)

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c) Describe how the structural difference in vessels A and B cause the process of ultrafiltration to occur. (3 marks)

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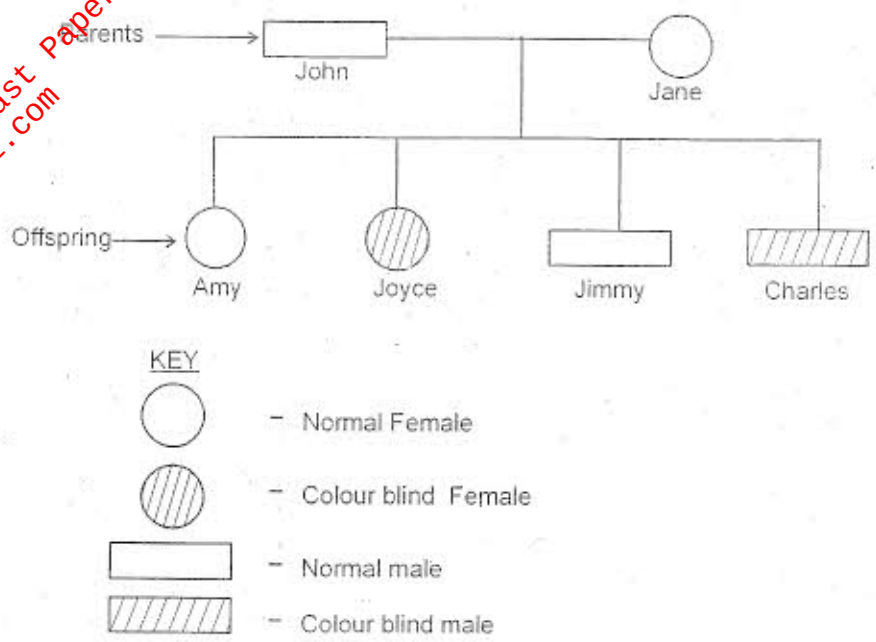
2. Colour blindness is a sex-linked disorder in humans. The gene responsible for the disorder is recessive and is located in the X-chromosome. Below is a pedigree diagram showing the inheritance of colour blindness.



a) Using letter **'B'** to represent the gene for normal colour vision and letter **'b'** to represent the gene for colour blindness, work out the genotype of Amy, Joyce, Jimmy and Charles. Show your working. (4 marks)

b) What is meant by sex-linked genes? (2 marks)

c) Name two sex-linked traits in humans associated with the Y-chromosome. (2 marks)

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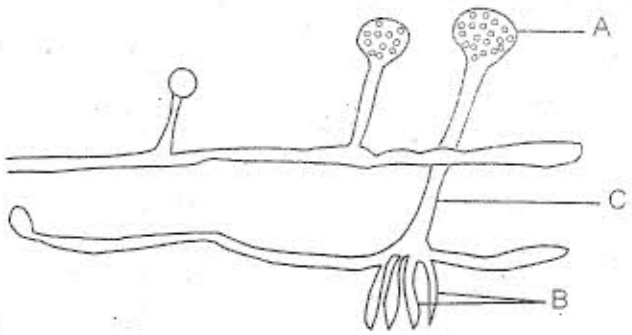
3. The diagram below shows the breadmould (Rhizopus)



a) Name the parts labelled; (3 marks)

A _____

B _____

C _____

b) Name the kingdom to which the organism belongs. (1 mark)

_____

_____

c) Name the structures produced in part A. (1 mark)

_____

_____

d) Name the process by which the structures named in (C) above are formed. (1 mark)

_____

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e) Give **two** characteristics of the organisms in the kingdom named in (B) above. (2 marks)

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4. a) The following is an equation for a reaction that occurs during the digestion of sucrose.

Sucrose → Fructose + Glucose

(i) Name the enzyme used in the above equation. (1mark)

(ii) Where is the enzyme named in (a)(i) produced in the alimentary canal of man?

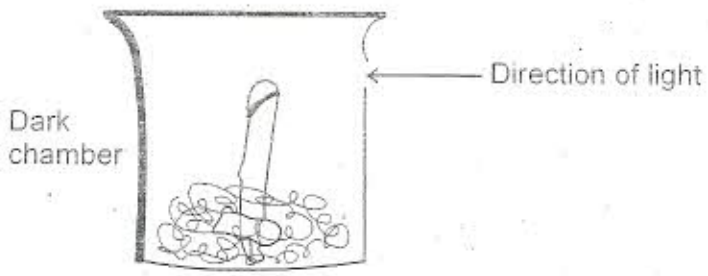
(1 mark)

b) State any three conditions needed for the best working of enzymes. (3 marks)

c) (i) Name the substance that can be used to slow down the above reaction. (1 mark)

(ii) Briefly explain how the above substance slows the reaction. (2 marks)

5. The diagram below shows a tip of a plant shoot or coleoptile with light coming towards it from one side.



a) How would the plant respond to the light? (1 mark)

b) Give the name of such response. (1 mark)

c) How is this response brought about? (4 marks)

d) What is the advantage of plants responding in this way? (2 marks)

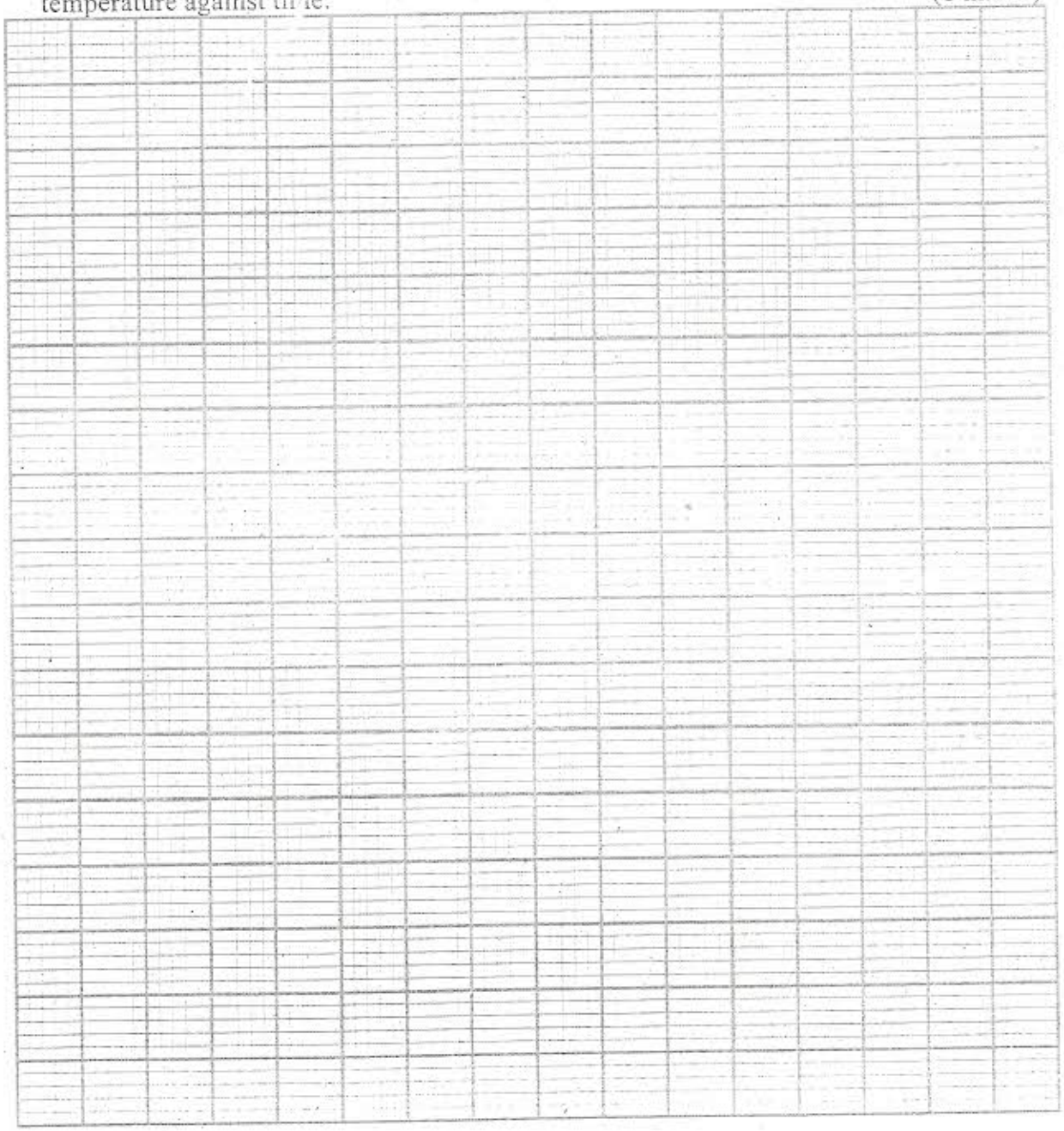
SECTION B (40 MARKS)

Answer question 6 (compulsory) in the spaces provided and either question 7 or 8 in the spaces provided.

6. In an experiment carried out on respiration, the rate of carbon (IV) oxide production in Bean seedlings was recorded under different temperatures as shown in the table below.

Time in hours		0	1	2	3	4	5	6
Temperature in °C	30	0.0	9.0	13.0	20.0	21.5	23.0	24.5
	35	0.0	8.0	16.5	25.0	25.5	26.5	27.0
	40	0.0	12.0	23.5	28.0	26.0	18.5	10.0

a) Using the same axes plot graphs to show carbon (IV) oxide production at each temperature against time. (8 marks)



b) (i) From the graph drawn what is the probable optimum respiration temperature for this experiment? (1 mark)

(ii) Explain your answer in (b)(i) above. (2 marks)

c) Account for the slope of the graph when temperature was maintained at 40°C.(3marks)

d) Name other ways of determining the rate of respiration other than the rate of carbon (IV) oxide production. (2 marks)

e) Suggest **two** other factors that would cause a decrease in the rate of carbon (IV) oxide production in the above experiment. (2 marks)

f) In what ways does anaerobic respiration of glucose differ from the aerobic respiration of the same substance. (2 marks)

7. Describe the adaptations of the mammalian skin to its function. (20marks)

8. Describe the composition / structure and function of blood. (20marks)