

NAME: \_\_\_\_\_ Index No: \_\_\_\_\_

SCHOOL: \_\_\_\_\_ DATE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_ CLASS: \_\_\_\_\_ ADM NO: \_\_\_\_\_

231/2

**BIOLOGY PAPER 2**

**THEORY**

**END OF TERM 2, 2024**

**TIME: 2 HOURS**

**INSTRUCTIONS TO CANDIDATE:**

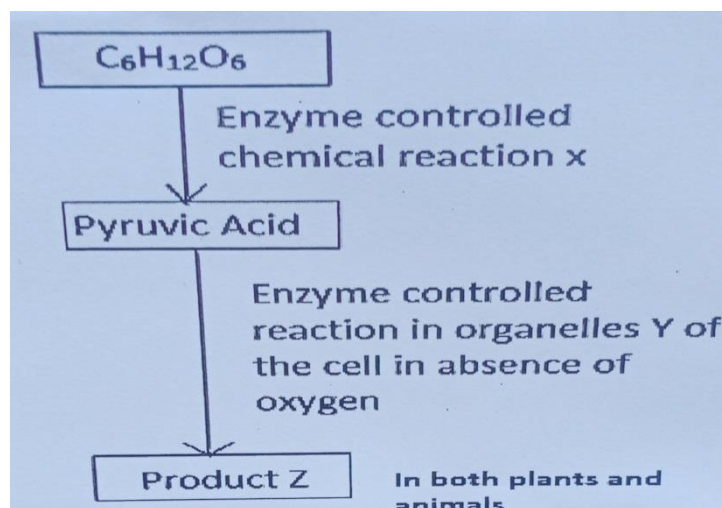
- Write your name and index number in the spaces provided above.
- This paper consists of two sections; A and B.
- Answer ALL the questions in section A in the spaces provided.
- In section B, answer questions 6 (compulsory) and either questions 7 or 8 in the spaces provided after question 8.

**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)**

1. Study the flow chart below of a process that takes place in both plants and animals;

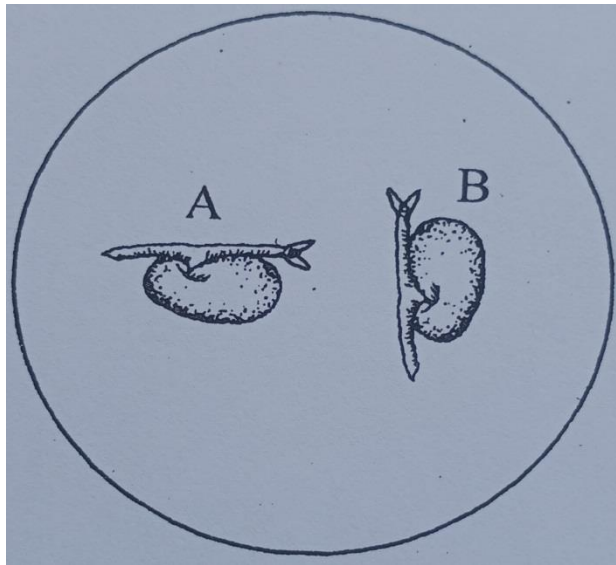


- a) Name the above process. (1mk)
- b) (i) In the above process name the chemical reaction represented by X. (1mk)
- (ii) Name the part of the cell where the enzyme controlled reactions in b(i) above takes place. (1mk)
- c) Name the product Z in:
- i) Plants (1mk)
  - ii) Animals (1mk)
- d) What would be the fate of pyruvic Acid if oxygen supply is available in the mitochondria of an animal cell. (2mks)
- e) What is meant by the term oxygen debt. (1mk)

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2. A student set up an experiment as shown in the diagram below to investigate a certain phenomenon. The petri dish contained moist cotton wool. The set up was placed in darkness and left for 24 hours.



- a) What is the aim of the experiment. (1mk)
- b) State the expected results after 24 hours. (2mks)
- c) Account for the results you have stated in (b) above. (5mks)
3. (a) Give an example of vestigial structure in humans. (1mk)

(b) State three evidences of organic evolution. (3mks)

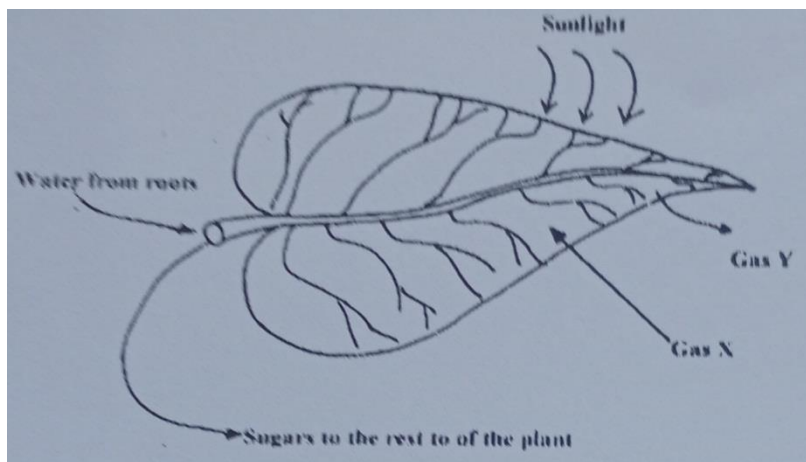
(c) The peppered moth (*Biston betularia*) exists in many parts of England. It normally rests on barks of trees. It exists in two major forms; a normal or wild type which is speckled white and mutant variety which is darker (melanic form). Before industrialization almost all the peppered moth in England were of white variety. After 1840s the population of the melanic form increased rapidly especially around the industrial cities. The white form dominated in the rural (non-polluted) areas.

i) Discuss why the lighter (non melanic) form was dominant in rural (non-polluted) areas. (1mk)

ii) What factors could have led to the differences in population size of the two variety in the two areas. (2mks)

(d) Distinguish between homologous and analogous structures. (2mks)

4. The following diagram of a leaf shows what happens in a plant leaf during photosynthesis;



a) Name the gases labeled X and Y (2mks)

X

Y

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- b) Give two ways in which leaves are adapted to absorb light. (2mks)
- c) Name the tissue that transports water into the leaf and sugars out of the leaf. (2mks)
- d) Explain why it's an advantage for the plant to store carbohydrates as starch rather than as sugars. (2mks)

5. (a) What are sex linked genes. (1mk)

(b) A normal woman and a haemophiliac man have a family. Using a punnet square and letter H for normal blood clotting, determine the possible phenotypes of their offsprings. (5mks)

(c) Other than haemophilia give two examples of sex-linked traits. (2mks)

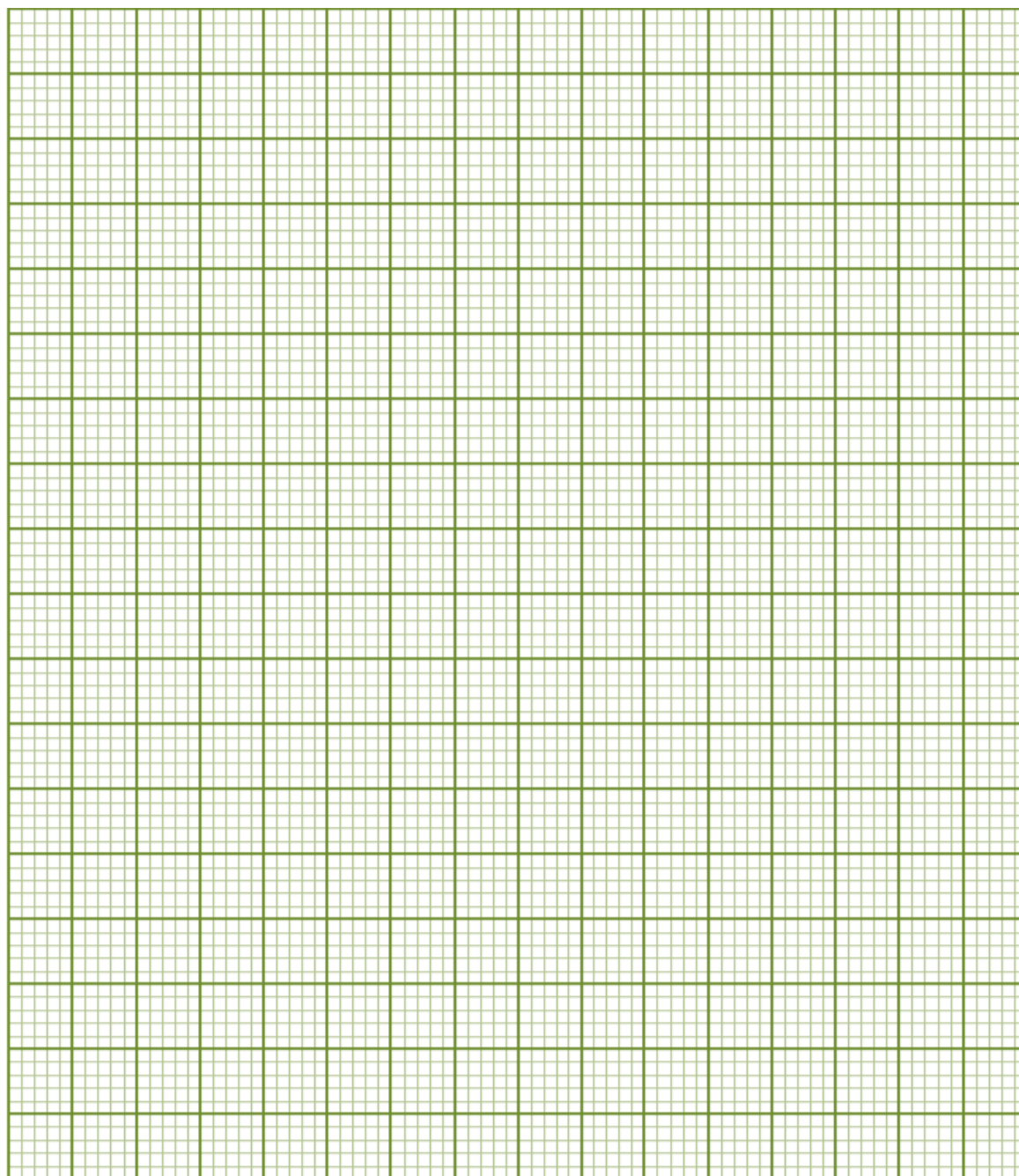
**SECTION B:**

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

6. Two person X and Y drunk volumes of concentrated solution of glucose. The amount of glucose in their blood was determined at intervals. The results are shown in the table below;

Time (minutes)	Glucose level in blood (Mg/100cm <sup>3</sup> )	
	X	Y
0	87	84
15	112	123
30	139	170
45	116	188
60	100	208
90	95	202
120	92	144
150	88	123

- a) On the grid provided, plot, graphs of glucose level in blood against time on the same axes. (7mks)



b) What was the concentration of glucose in the blood of X and Y at the 20<sup>th</sup> minute. (2mks)

- c) Suggest why the glucose level in the person X stopped rising after 30 minutes while it continued rising in person Y. (3mks)
- d) Account for the decrease in glucose level in person X after 30 minutes and person Y after 60 minutes. (3mks)
- e) Name the compound that stores energy released during oxidation of glucose. (1mk)
- f) Explain what happens to excess amino acids. (4mks)
7. (a) Describe how gaseous exchange takes place in terrestrial plant. (10mks)
- (b) Describe the mechanism of gaseous exchange in a mammal. (10mks)
8. Explain how abiotic factors affect plant. (20mks)



