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P530/2

BIOLOGY

PAPER 2

June/July 2016

2½ hours

MWALIMU EXAMINATIONS BUREAU

UACE PRE-MOCK RESOURCE EXAMINATIONS 2016

S.6 BIOLOGY

PAPER 2

2 hours 30 minutes

INSTRUCTIONS

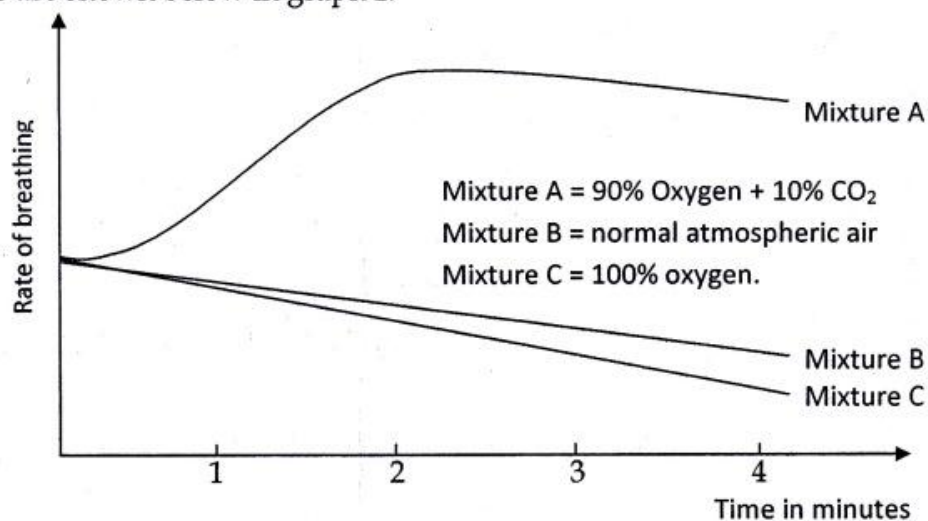
*Answer **all** the in Section **A** and three questions from Section **B**.*

Candidates are advised to read questions carefully, organize their answers and present them precisely and logically, illustrating with well-labelled diagrams where necessary.

SECTION A (40 MARKS)

1. In an experiment, a subject was given various mixtures to breath and the rate of breathing was measured.

The results are shown below in graph 1.



Graph 1

Five small discs cut from spinach leaves were floated in a small volume of buffered hydrogen carbonate solution in a flask attached to a respirometer. The discs were first exposed to bright light, then to dim light and finally left in the dark. Oxygen release was recorded as positive values and oxygen up take as negative values.

The results obtained from the experiment are given below in table 1.

Light intensity	Time interval in minutes	Oxygen uptake or release for each 3 minute interval (mm ³)
Bright light	0 - 3	+57
	3 - 6	+64
	6 - 9	+58
	9 - 12	+60
Dim light	12 - 15	+16
	15 - 18	+3
Dark	18 - 21	-16
	21 - 24	-12
	24 - 27	-15
	27 - 30	-14

Use the information above to answer the questions that follow:

- a)
 - i) Present the data in table 1 in suitable graphical form. (7marks)
 - ii) Calculate the mean rate of oxygen release in bright light. (2marks)
 - iii) Explain the significance of the results obtained from this experiment. (11marks)
- b) Explain what the data in graph 1 show concerning how the rate of breathing in controlled. (10 marks)
- c) In the light of the information provided by graph 1. Show why mouth to mouth resuscitation is a better means of artificial respiration than pressing on the chest wall. (4 marks)
- d) Why is it more dangerous to rebreath expired air if it is passed through soda lime? (6 marks)

SECTION B

Attempt 3 questions

- 2. What is meant by the following terms?
 - a) Ozone (5 marks)
 - b) Green house effect (5 marks)
 - c) Acid rain (5 marks)
 - d) Biomagnifications (5 marks)
- 3.
 - a) Discuss the functional properties of skeletal muscles. (8 marks)
 - b) Explain how the balance of the body is achieved. (7 marks)
 - c) Explain echolocation in bats. (5 marks)
- 4.
 - a) Discuss the various mechanisms of hormonal action (7 marks)
 - b) Show the effects of hypo and hyper thyroidism. (6 marks)
 - c) Explain how thyroxine and cortisone are controlled. (7marks)
- 5.
 - a) Describe changes in the human foetal circulation immediately after birth. (10 marks)
 - b) Discuss the role of various hormones during pregnancy. (10 marks)
- 6.
 - a) Describe the mechanism by which a protozoan such as paramecium is able to maintain a constant osmotic pressure in a pond. (12 marks)
 - b) Explain how the human body responds to a drop in the air temperature from 28°C to 15°C. (8 marks)

End