

P530/2

BIOLOGY

PAPER

(THEORY)

2HRS 30MIN

Uganda Advanced Certificate of Education

PRE-REGISTRATION EXAM 2022

S.6 BIOLOGY PAPER TWO

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES

- This paper consists of two sections A and B.
- Attempt question one in section A plus three others in section B
- Candidates are advised to read the questions carefully, organize their answers and present them precisely and logically, illustrating with well labelled diagrams where necessary

SECTION B (40MARKS)

1.

In an experiment, a healthy man at rest was subjected to various gaseous mixtures to breathe and the rate of breathing was measured every one minute for four minutes. The gaseous mixtures used were:

Mixture A= 90% oxygen +10% carbon dioxide

Mixture B= Normal atmospheric air.

Mixture C=100% pure oxygen

The table below shows the data collected.

Time in minutes	Mixtures	0	1	2	3	4
Rate of breathing measured as number of breath per minute	A	16	16	28	29	29
	B	16	16	16	16	16
	C	16	15	13	10	8

- a) Present the results above graphically. (09 marks)
- b) Explain what the data show concerning how the rate of breathing is controlled. (05marks)
- c) In the light of the information provided by the graph, show why mouth to mouth resuscitation is a better means of artificial respiration than pressing on the chest wall. (05 marks)
- d) Why is it more dangerous to re-breathe expired air if it is passed through sodium hydroxide solution? (09 marks)
- e) Describe how humans homeostatically regulate the level of carbon dioxide in the body. (12 marks)

SECTION: B (60 MARKS)

2.

a) Describe the adaptations possessed by tissues/cells to maximize rate of diffusion.

(10 marks)

b) Explain how exocytosis and endocytosis occur across the plasma membrane.

(05 marks)

c) Give the significance of diffusion in nature

(05 marks)

3.

a) Adults possess little/no brown fat while newborn mammals have much brown fat. Explain.

(03 marks)

b) Describe the functions of adipose tissue.

(06 marks)

c) Describe how the structure of areolar tissue is related to its roles.

(11 marks)

4.

a) Describe the role of the following as regards digestion in man;

i. Liver

(05 marks)

ii. Duodenum

(04 marks)

iii. Pancreas

(06 marks)

b) Briefly explain how self-digestion is prevented in man.

(05 marks)

5.

a) Describe the levels of protein structure.

(12 marks)

b) Explain the specificity of enzymes, with reference to molecular structure.

(08 marks)

6.

a) How is sex determined by sex chromosomes in man?

(08 marks)

b) How haemophilia and colour blindness are sex linked characters?

(08 marks)

c) Why are there more colour blind individuals than haemophiliacs in the population when both conditions are inherited in the same way?

(04 marks)

END