

P530/2
Biology
Paper 1
(Theory)
2 $\frac{1}{2}$ Hours



CODE HIGH SCHOOL SEETA -BAJJO MUKONO
END OF TERM III EXAMINATIONS 2023
BIOLOGY
PAPER 2
TIME: 2 $\frac{1}{2}$ HOURS

Instructions:

Answer questions **one** (1) and any other **three** (3) from section B
Section A carries 40 marks

SECTION A:

1. Table 1 below shows the variations in percentage saturation of Hemoglobin at different pH, and in excess carbon dioxide as the oxygen partial pressure varies.

Table 1

Oxygen partial Pressure [mmHg]	% hemoglobin saturation with O ₂		
	PH7.0	PH7.8	Excess CO ₂
0	0	0	0
25	32.0	41.5	24.5
50	64.5	68.5	51.0
75	76.0	82.0	62.5
100	81.0	87.5	68.0
125	88.5	92.0	70.5

150	93.0	95.5	71.0
200	95.0	100.0	72.5

- (a) Using the same axes and suitable scales, reflect the above results graphically
(14 marks)
- (b) Explain why the presence of excess carbon dioxide in this experiment behaves like or stimulates low pH
(4 marks)
- (c) Using the data or the graphs you have drawn in (a) explain how high concentration of CO_2 in blood benefits tissues deficient in O_2 . (4 marks)
- (d) Explain the conditions that favour gaseous exchange in
(i) the mammalian lungs (10 marks)
(ii) the internal tissues of an insect
- (e) Athletes who live at low altitudes are trained at high altitudes before major competitions. Explain
(i) the respiratory changes they would be expected to acquire during training
(ii) the importance of the acquired changes (8 marks)

SECTION B

2. (a) How are gas exchange surfaces adapted to their function in terrestrial mammals? (8 marks)
- (b) Give an account of the gas exchange mechanisms in a bony fish such as Tilapia. How do these mechanisms differ from those of terrestrial mammals? (12 marks)
3. (a) State three ways in which water has similar functions in both plants and animals
- (b) Explain the ways in which desert mammals minimize water loss through the following:
(i) structural means (5 marks)
(ii) physiological means (5 marks)
(iii) behavioural means (7 marks)

4. (a) Explain the terms.(06marks)

- (i) water potential
- (ii) osmotic potential
- (iii) pressure potential

(b) Discuss the water relations of

- (i) a turgid cell.(02marks)
- (ii) a plasmolysed cell .(02marks)

(c) Discuss the way in which various forms of entry of materials in cells operate(08marks)

5. a) Name the major respiratory pigments found in mammals. (04marks)

(b) Explain how CO_2 is transported in man .(06marks)

(c) What changes in the body are brought as a result of increased CO_2 level in blood? (10marks)

6. a) List the properties of enzymes (08 marks)

(b) To what extent can each be explained by the lock and key mechanism? (12marks)

END

...WISHING YOU SUCCESS & HAPPY NEW 2024....