

NAME:..... COMB:

ST. STEPHEN'S COLLEGE BBAJJA

BIOLOGY P530/2

SENIOR SIX

INSTRUCTIONS:

- This paper consists of two sections A and B
- Section A and B are compulsory

SECTION A

1. Table below shows the effect of varying the partial pressures of Oxygen on the percentage saturation of haemoglobin from a mammalian goat which lives at an altitude of 5000m on the mountain and from another goat which lives at sea level

Partial pressure of Oxygen (mmHg)	% saturation of haemoglobin with oxygen	
	Goat at 500m	Goat at the sea level
0	0	0
20	60	15
40	86	55
60	95	80
80	100	94
100	100	100

- a) Using the same axes, plot oxygen dissociation curves for the haemoglobins of these animals. (08 marks)
- b) i) Compare the changes in the percentage saturation of haemoglobin with Oxygen for the two goats. (08 marks)
- ii) What is the significance of the differences in b (i) to the survival of the goats in the habitats? (04 marks)
- c) Give two regions in the body of these animals where:
- i) Oxygen levels are very high.
- ii) Carbondioxide levels are very high (04 marks)
- d) Explain the importance of the reversible binding reaction of haemoglobin to Oxygen in mammals. (04 marks)
- e) Describe other factors essential for successful survival of a mammal at the Mountain. (12 marks)

SECTION B

2. a) Distinguish between transcription and translation. (06 marks)
b) Describe the process of transaction in a cell. (14 marks)
3. a) Explain how the events of meiosis results into variation in a population. (04 marks)
b) Describe the process of nuclear division that occurs in menstem cell. (16 marks)
4. a) Describe the ecological effects of drainage of nitrate fertilizers into rivers and streams. (10 marks)
b) What are the effects of thermal pollution on organisms in water body? (05 marks)
c) Outline the measures which can be taken to control water pollution. (05 marks)
5. a) Why are active respiratory systems not found in plants? (03 marks)
b) How are plants adapted to gaseous exchange? (07 marks)
c) Compare the respiratory systems of an insect and a fish. (10 marks)
6. a) Compare photosynthesis and aerobic respiration. (09 marks)
b) Explain the effects of low oxygen tensions on C₃ plants. (05 marks)
c) Explain why C₄ plants are more efficient in photosynthesis then C₃ plants. (06 marks)

END