



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

BACHELOR OF SCIENCE HONOURS DEGREE

THEORY: ANIMAL PHYSIOLOGY SBB 1206

AUGUST 2009

3 HOURS (100 MARKS)

INSTRUCTIONS

Answer Four (4) Questions. Each question carries 25 marks. Where a question contains subdivisions, the mark value for each subdivision is given in brackets. Illustrate your answer where appropriate with large, clearly labelled diagrams

1. Describe the sequence of events from the time when an object in front of the eye is illuminated by light to the time when the image of such an object is registered in the brain.
2. Outline the Ornithine cycle and explain how the kidney removes and retains some substances in the human body.
3. The heart is an efficient pump which propels blood around the body and adjusts to situations such as fright and rest; give an account of how it achieves its functions.
4. Discuss the role played by hormones produced in the adrenal cortex.
5. Describe how the digestion and absorption of breakfast meal composed of bread will progress along the alimentary canal if the composition is as follows:
 - (a) bread with margarine spread
 - (b) egg and bacon
 - (c) a cup of tea with two teaspoons of sugar sweetened milk (25 marks)
- 6.(a) (i) Describe how oxygen is transported from lungs to tissues by haemoglobin. (8 marks)
 - (ii) Sketch a graph to show the relationship between partial pressure of oxygen in blood and oxygen bound to haemoglobin. (5 marks)
 - (iii) The graph you sketched in (ii) above can also be expressed in terms of “volume per cent”. Explain the term “volume per cent” and describe the similarities and differences between the two graphs. (5 marks)
- (b) (i) Define the term “utilization coefficient” as used in respiration. (2 marks)
 - (ii) After exercise, 15 ml of oxygen is transported by each 100 ml of blood in a man.

If the cardiac output is 5000 ml of blood per minute, calculate the amount of oxygen transported to tissues in 30 seconds. (5 marks)

END OF EXAMINATION