

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

SSC2206

FACULTY OF APPLIED SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE EXAMINATIONS

DEPARTMENT OF SPORTS SCIENCE AND COACHING

THEORY: SSC2206: EXERCISE PHYSIOLOGY AND BIOCHEMISTRY

MAY 2005

3 HOURS (100 MARKS)

INSTRUCTIONS

Answer any four questions only. 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 labeled diagrams.

1. a) Discuss the physiological adaptations to endurance training. [15 marks]
b) Write short notes on the following:
(i) Neuromuscular fatigue [5 marks]
(ii) The stretch reflex [5 marks]
2. a) Discuss muscle adaptations to strength [12.5 marks]
b) Describe the effects of neural, chemical and hormonal factors on the cardiovascular adjustment to exercise. [12.5 marks]
3. a) Why is it desirable for athletes to periodically return from altitude to sea level for intensive training? [10 marks]
b) Describe the effects of long-term altitude exposure on body composition. [8 marks]
c) During exercise in the heat, can prolonged redirection in blood flow to certain tissues cause complications? Explain. [7 marks]
4. a) Discuss how chemical and neural factors regulate ventilation during exercise. [13 mark]
b) Identify specific hormones from the following groups and discuss their responses to endurance training.
(i) Hypothalamus pituitary hormones [5 marks]
(ii) Adrenal hormones [3 marks]
(iii) Pancreatic hormones [4 marks]
5. a) (i) Describe the hormonal regulation of metabolism during exercise. [8 marks]
(ii) What hormones are involved, and how do they influence the availability of carbohydrates and fats for energy during exercise lasting several hours? [8 marks]

b) Write short notes on the following:

(i) The reflex arc

(4.5 marks)

(ii) The motor end plate

[4.5 marks]

6. a) Discuss immune system components that exhibit change after prolonged heavy exercise.

[12 marks]

b) Discuss the immediate and longer-term adjustments to altitude hypoxia.

[13 marks]

END OF EXAMINATION QUESTION PAPER