

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

SSC1220

FACULTY OF APPLIED SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE EXAMINATIONS

DEPARTMENT OF SPORTS SCIENCE AND COACHING

THEORY: SSC1220 FUNCTIONAL ANATOMY

MAY 2011

3 HOURS (100 MARKS)

INSTRUCTIONS

Answer **4 (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. Discuss the role of exercise to the following:
 - a) Bone. [5 marks]
 - b) Muscle. [10 marks]
 - c) Tendons and ligaments. [10 marks]

2. Coaches of throwing and aquatic sports have observed a marked increase in shoulder pain among their older players and fast bowlers with intense preparation for the world cups in 2011. As a student of Functional Anatomy you have been requested to intervene by highlighting the following:
 - a) The functional structure of the shoulder complex. [10 marks]
 - b) The mechanism of injury of the rotator cuff muscles. [5 marks]
 - c) Two exercises that could be administered to strengthen the rotator cuff musculature. [10 marks]

3. With respect to the trunk and the thorax:
 - a) List any three vertebrate column deformations. [3 marks]
 - b) Identify the muscles that make up the “*six pack*”. [4 marks]
 - c) Assess the importance of balanced muscles in the maintenance of an aesthetic posture. [8 marks]
 - d) Propose two exercises that could be used to strengthen the trunk muscles. [10 marks]

NB: Your selection of exercises should target both the anterior and posterior musculature.



4. The picture above depicts the Telemark position in a triple jump event.
- a) Describe the position of the upper limbs and lower limbs. [8 marks]
 - b) Discuss the muscular action of the lower limbs in this conservation of the position in flight. [12 marks]
 - c) Briefly highlight the role of the atlanto-occipital region in sporting activities. [5 marks]
5. “The knee being the largest synovial joint should not be considered as a single joint...”
- a) Discuss the different articulations and the movements they permit. [15 marks]
 - b) Briefly discuss the mechanism of injury in the rupturing of anterior cruciate ligaments. [10 marks]
6. With reference to the ankle and foot:
- a) Discuss the weight-bearing, locomotive and propulsive roles in walking and in any another sport. [15 marks]
 - b) Highlight the significance of the following to a runner who wishes to prevent calf injuries:
 - i. Choice of running shoes. [5 marks]
 - ii. Change in running surface from hard to soft. [5 marks]

END OF EXAMINATION