

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 2012

3 HOURS (100 MARKS)

INSTRUCTIONS

Answer **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. With examples of specific types of exercise, discuss the effects of exercise on the following:
 - a) Bone. (5 marks)
 - b) Muscle. (10 marks)
 - c) Joints. (10 marks)
2. Cricket administrators have observed a marked increase in shoulder pain among their older players and fast bowlers with the intensified preparations for the 20 -20 world series. 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 effects of over-training on the rotator cuff in cricket. (5 marks)
 - c) Two exercises that could be administered to strengthen the rotator cuff muscles in the light of the overuse injuries suffered during the intense training . (10 marks)
3. With reference to the trunk and the thorax:
 - a) List any three vertebral column deformations. (3 marks)
 - b) Identify the muscles that make up the “*quadriceps*” (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)

4. “The largest synovial joint in the human body, the knee, should not be considered a single joint...”

Using examples from four different sporting actions, identify the major functional anatomical units involved in each case, and relate them to the movements.

(25 marks)

5. a) Discuss the weight-bearing, locomotive and propulsive roles of the ankle and the foot in the context of any three different sporting activities. (15 marks)
- b) Explain how the following factors could contribute to the minimization of injuries to an athlete:
- i. Warming up. (5 marks)
 - ii. Choice of footwear. (5 marks)

6. The picture below depicts a sprinting athlete during an acceleration phase,



- a) Draw a table and identify the anatomical movements and major muscles of the upper and lower limbs for each position. (20 marks)
- b) Highlight the role of the atlanto-occipital region in sports and physical activity. (5 marks)

END OF EXAMINATION