NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

DEPARTMENT OF RADIOGRAPHY

BSc HONOURS IN RADIOGRAPHY PART II

IMAGING OF THE SKELETAL SYSTEM

SRA2109

First Semester Examination Paper

March 2025

This examination paper consists of 4 pages

Time Allowed : **3 hours**

Total Marks : **100**

Special Requirements : **None**

Examiner's Name : **Miss N Gertrude Makonese**

INSTRUCTIONS

ANSWER ALL PARTS OF QUESTION 1 IN SECTION A AND ANY THREE QUESTIONS FROM SECTION B. SECTION A CARRIES 40 MARKS AND SECTION B CARRIES 60 MARKS.

MARK ALLOCATION

QUESTION	MARKS
1.	40
2.	20
3.	20
4.	20
5.	20
6.	20
Maximum possible mark	**100**

SECTION A

1. a) With reference to ionising radiation protection define the following terms;

i. IR(ME)R, **[1]**

ii. ALARA, **[1]**

iii. Inverse Square Law, **[1]**

b) An inversion injury typically affects the ankle, often further leading to lateral ligament injuries. What are the standard projections to assess such injury? **[5]**

c) Describe the positioning technique undertaken for a patient presenting with a request form written: pain, query idiopathic Avascular Necrosis (AVN)? **[5]**

d) Name and justify four (4) accessories that may be needed in the X-ray department for imaging of the skeletal system. **[4]**

e) Explain the aetiology for spondylolisthesis. **[4]**

f) Explain the value of anatomical structures that should be seen on an X-ray image when a fracture is suspected in the sacro-iliac joint and ischiopubic rami region. **[5]**

g) Define the following pathological conditions;

i. Paget's disease. **[2]**

ii. Wedge fracture. **[2]**

h) Describe 5 types of fractures in association with SALTER HARRIS stages. **[2x5]**

SECTION B

2. With respect to suspected fracture on the thoraco-lumbar region:

i. Justify the radiographic projection of choice that can be done to demonstrate the suspected fracture. **[4]**

ii. Describe the patient positioning. [4]

iii. Describe beam centering. [2]

iv. State the FFD for the procedure [1]

v. Describe the characteristics of this image. **[3]**

vi Describe the radiation protection measures that can be employed for the projection in case of a child bearing age female. **[6]**

3.a) Compare the role of CT and plain radiography in imaging complications of an elbow. **[10]**

b) Outline the evaluation criteria of a pediatric elbow. **[6]**

c) Explain the management of anatomy that is commonly associated with Galeazzi fracture. **[4]**

4. a) With reference to management of Dynamic Hip Screw (DHS) in theatre, describe an imaging procedure that can be taken to demonstrate this area. **[8]**

b) Describe the Tib/fib Nailing procedure **[4]**

c) Describe the Tibia plateau **[3]**

d) Describe the anatomy that is usually affected by fractures of the medial malleoli. **[5]**

5.a) Identify the shoulder girdle bones in association with their related anatomy. **[6]**

b) Describe three (3) x-ray procedures to demonstrate the humerus. **[12]**

c) Explain angulation of the x-ray tube to demonstrate the clavicle. **[2]**

6. a) Outline how you would demonstrate a Colle's fracture radiographically. **[8]**

Outline how you would demonstrate a Smith's fracture radiographically. **[8]**

b) Justify projections used to demonstrate a scaphoid fracture. **[2]**

c) Justify reimaging of the scaphoid bone after 10 to 14 days. **[2]**

End of Examination!