NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
APPLIED PHYSICS DEPARTMENT
SRA2104- THE AXIAL SKELETON

BSc. HONOURS IN RADIOGRAPHY- PART II SUPLEMENTARY EXAMINATION

JANUARY 2014 DURATION: 3HOURS

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

SECTION A

1. (a) Explain microcephaly. [4]

(b) Explain the four curves of the vertebral column of an adult. [6]

(c) Explain the major features of an infant skull. [4]

(d) With respect to plain radiography of the sphenoid bone in post trauma patients, explain:

i. The use of horizontal tube projection (HTP) and [2]

ii. patient positioning. [2]

(e) With respect to the hyoid bone, write brief notes on:

i. articulation and [1]

ii. skeletal muscles and ligaments related to the hyoid bone [3]

(f) In a particular plain skull radiograph the dorsum selae is seen through the foramen magnum and the frontal bone is projected on the occipital bone. Describe this view clearly stating:

i. Patient positioning [2]

ii. Direction of the central ray [1]

iii. Centring of the beam [1]

(g) With respect to osteoporosis, explain:

i. The risk factors and [4]

ii. The diagnosis. [4]

(h) Describe the characteristic radiographic appearance of:

i. Normal paraspinal line [2]

ii. Age related lateral osteophytes [2]

iii. Wedge fracture of L3 vertebra [2]

SECTION B

2. With respect to thoracic spine and lumbar spine vertebra, explain:

i. The lateral projection gives most information. [2]

ii. In a lumbar spine radiograph of a certain patient, there is a wider distance between the pedicles of L3 when compared with the interpediculate distance of the vertebra body below (L2). [2]

iii. The "three column spine" concept. [10]

iv. In a thoracic spine radiograph of a certain trauma patient, the soft tissue shadow of the paraspinal line bulges on both sides. [6]

3. A patient presents to your department with a radiology request for plain radiography of the sphenoid bone.

(a) Describe the anatomy of the sphenoid bone [4]

(b) Discuss how you would review the justification of this request [8]

(c) Explain the use of plain radiographs of the sphenoid bone in furthering diagnosis in post trauma patients [4]

(d) Explain the use of plain radiographs of the sphenoid bone in furthering [4]

diagnosis in non trauma patients.

4. (a) Describe the functional anatomy of the axial skeleton. [3]

(b) Justify the care of patient for post trauma cervical spine patients [3]

(c) With respect to plain radiography of the cervical spine, discuss:

i. It is common to see a thin black line across the base of the peg that does not represent a fracture [4]

ii. In lateral images the three contour (accuate) lines are fundamental in excluding abnormality and [5]

iii. The "Harris ring" is fundamental in excluding fractures through the base of the peg. [5]

5. Describe the followings:

i. Anatomy of a representative cervical vertebra [4]

ii. Anatomy of a representative thoracic vertebra [4]

iii. Anatomy of a representative lumbar vertebra [4]

iv. Minimum radiology request information specific for the diagnosis of osteoporosis [8]

6. Describe the following clinical variations:

i. Adamantinoma [2]

ii. Scoliosis [2]

iii. Kyphosis [2]

iv. Spina bifida [2]

v. Pott's disease [2]

vi. Cleidocranial dystosis [2]

vii. Spondylolisthesis [2]

viii. Ankylosing Spondylitis [2]

ix. Craniostenosis [2]

x. Klippel-Feil syndrome [2]

END OF EXAMINATION