

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

APPLIED PHYSICS DEPARTMENT

EXAMINATION

SRA 3106 – NEURO – ENDOCRINE SYSTEM

BSc HONOURS PART III: DECEMBER 2005 DURATION: 3 HOURS

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

SECTION A

1. (a) Define the following pathologies of the neuro- endocrine system:
 - (i) neurilemmona
 - (ii) spina bifida
 - (iii) neuroblastoma
 - (iv) Cushing's syndrome
 - (v) microcephaly [5]
- (b) With reference to dacrocystography, explain why the technique involves the following:
 - (i) intubation [2]
 - (ii) macroradiography [1]
 - (iii) subtraction [2]
- (c) Justify your choice of x-ray tube for skull radiography. [5]
- (d) (i) Define the blood brain barrier [1]
(ii) Explain its significance in imaging of the brain [4]
- (e) With reference to thyroid imaging, outline two imaging techniques that can be used to inform diagnosis [5]
- (f) Compare the formats available for recording and storing images during myelography. [5]
- (g) (i) Describe a radiographic projection to demonstrate a depressed fracture of the skull on the parietal bone. [4]
(ii) Outline one possible complication that may arise from such an injury [1]

- (h) Indicating the significant radiological appearances, outline 2 imaging methods that may be used to demonstrate a neuroblastoma [5]

SECTION B

2. A patient presents to the imaging department on a stretcher with a suspected complicated fracture of the skull with meningeal tear or penetration.
- (a) Identify 2 clinical signs that may be observed on the patient, indicating the likely fracture site. [4]
 - (b) Discuss how a diagnosis could be arrived at using plain radiography [14]
 - (c) Explain how an image of optimum quality can be obtained. [2]
3. (a) The pancreas is termed a heterocrine gland with respect to its physiology. Explain what is meant by the term heterocrine. [2]
- (b) Discuss the role of the pancreas in maintaining homeostasis. [8]
 - (c) Critically evaluate the role of plain film radiography and ultrasound in the imaging of pancreas. [10]
4. (a) A patient suffering from epilepsy is referred to the imaging department. Discuss the role of 3 imaging modalities to inform diagnosis. [15]
- (b) Outline the role of CT in brain imaging of AIDS patients. [5]
5. (a) Evaluate the need for a dedicated skull unit in a modern imaging department. [10]
- (b) For any named 2 abnormal or pathological conditions of the head, evaluate the use of MRI, CT, angiography [10]
6. (a) Evaluate the role of myelography in demonstrating the spinal cord and spinal nerves. [10]
- (b) Discuss the role of the radiographer during myelography. [10]