

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

APPLIED PHYSICS DEPARTMENT

SRA2206- IMAGING OF THE NEUROENDOCRINE SYSTEM I

BSC HONOURS IN RADIOGRAPHY- PART II

AUGUST 2013

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) The student must describe the three main divisions of the **peroneal nerve**: [6]
- Deep peroneal nerve,
 - Superficial peroneal nerve and
 - Common peroneal nerve
- (b) The question tests the students' understanding of association cortex. The student is expected to describe the physiology of the association cortex giving examples of consequences of clinical damage to relevant parts of the brain that deal with voluntary motor movement, speech and language development. [4]
- (c) The student is expected to state the origin and terminal points of the spinal cord in an adult against that of an infant. To explain the difference, the student must then identify the differential growth rates for the spinal cord and the vertebral column. [2]
- (d) The student is expected to identify the organelle responsible for mitotic nature of cells hence or otherwise relate this to the structure and amitotic nature of neurons. The student must further show appreciation of degeneration and regeneration nature of neurons giving clinical examples. [4]

- (e) Student to show knowledge of limbic system physiology as relates to emotion, affective behavior, desire, motivation and goal-directed behavior. [5]
- (f) The student must show knowledge with respect to the physiology of parathyroid glands. He/she must explain the said signs in relation to the physiology. [5]
- (g) The student must show knowledge of the synergistic nature of the two systems, action, method of transmission and speed of transmission. [4]
- (h) Student to give similarities and differences between “Wine and dine” response in the parasympathetic nervous system and the “fight or flight” in the sympathetic nervous system. [5]
- (i) Explain clinical signs of *Cerebellar medulloblastoma*. [5]

SECTION B

2. The student must clearly describe the anatomy of the two structurally and functionally distinct parts of the hypophysis: [20]

- Neurohypophysis (diencephalon) and
- Adenohypophysis (pharynx-ectoderm)

The question does not test the students' knowledge of the physiology.

3. (a) This question tests the students' understanding of the roles of the said nerves. The student must state that: [6]

A= Facial Palsy

B= A + *decreased salivation*

C= A + B + *hyperacusis*

D= A + B + C + *decreased lacrimal secretion*

E= Central Type Facial Palsy

- (b) The question tests the students' knowledge that the pituitary gland acts as the master gland. The student must therefore describe the role of the pituitary gland in regulating secretions of other glands. [14]
4. The student must simply give similarities and differences between the two systems by stating what each one is and what it does. [20]
5. (a) The student is expected to show knowledge of the effects of common pathologies of the endocrine system on their physiology. [8]
- (b) The question tests whether the students' can relate the condition to the main nervous connections of the spinal cord. [12]
6. (a) This question tests the students' ability to apply lecture material in interpreting disorders of association cortex of the cerebral cortex. [6]
- b) This question seeks to draw the students' attention to distinct segments of the visual pathway so that the students' can distinguish their unique roles. [14]

END OF EXAMINATION