



FACULTY OF MEDICINE, UNIVERSITY OF RUHUNA  
SECOND EXAMINATION FOR MEDICAL DEGREES – OCTOBER 2016  
ANATOMY PAPER II

THREE HOURS

WEDNESDAY 26<sup>th</sup> OCTOBER 2016

Answer all FIVE questions

Answer EACH QUESTION in a SEPARATE BOOK

Use diagrams where necessary

1. A 35 year-old man was admitted to the emergency unit following a fall on his outstretched left hand. On examination, he was unable to extend his left wrist joint and fingers at the metacarpophalangeal joints. Skin sensation was absent over a small area of the dorsum of the left hand between first and second metacarpals. Radiograph revealed a mid-shaft fracture of the left humerus.
  - 1.1
    - 1.1.1 What is the nerve injured due to the above fracture? (10 marks)
    - 1.1.2 Describe the origin and course of the nerve stated in 1.1.1 (40 marks)
    - 1.1.3 List the affected muscles that lead to his inability to extend the wrist joint. (10 marks)
  - 1.2 Describe the light microscopic appearance of different types of bone cells. (20 marks)
  - 1.3 Describe the process of cleavage in embryological development. (20 marks)
  
2. Following a total thyroidectomy, a 50 year-old woman developed hoarseness. On examination it was found that her right vocal cord was not moving.
  - 2.1
    - 2.1.1 Explain the anatomical basis for the hoarseness in this patient. (25 marks)
    - 2.1.2 State the tissue layers encountered by surgeon when exposing the thyroid gland, during thyroidectomy. (15 marks)
  - 2.3 Explain the blood supply of the thyroid gland. (20 marks)
  - 2.4 Describe briefly the embryological development of the thyroid gland. (20 marks)
  - 2.5 Describe briefly the light microscopic appearance of the thyroid gland. (20 marks)
  
3. A 50 year-old male who had a head injury following a road traffic accident was found to have absent gag reflex and paralysis of the soft palate. Two days later a purplish discoloration was observed close to the mastoid process (Battle sign). Skull radiograph revealed a fracture.
  - 3.1
    - 3.1.1 State the cranial fossa fractured and the foramen involved. (20 marks)
    - 3.1.2 Name two neurological structures damaged in this patient. (10 marks)
    - 3.1.3 Describe the light microscopic appearance of a structure you stated in 3.1.2. (20 marks)
    - 3.1.4 State the anatomical basis of the clinical features underlined above. (30 marks)
  - 3.3 Describe the embryological development of the neural crest cells. (20 marks)

4. An 8 year-old boy who had a loose tooth developed a sudden severe bout of cough and noted that tooth was missing from the tooth socket. One week after the incident, he developed fever and chest pain on the right side. An urgent chest radiograph revealed a tooth in the right lung field and a shifting of the mediastinum to the right side.
- 4.1
- 4.1.1 State the segment of the lung where the aspirated tooth likely to have got lodged. Give anatomical reasons for your answer. (20 marks)
- 4.1.2 Explain anatomical basis of the features underlined above. (20 marks)
- 4.2 Describe the gross anatomy of a broncho-pulmonary segment. (20 marks)
- 4.3 Describe briefly the features of the epithelium lining the trachea. (20 marks)
- 4.4 Describe briefly the embryological development of the trachea. (20 marks)
5. Following a colonoscopic examination, a 60 year-old male developed peritonitis on the next day. Further investigations revealed a rectal perforation and presence of fecal matter within the peritoneal cavity.
- 5.1
- 5.1.1 Explain the possible sites of rectal perforation in this patient and state anatomical reasons for your answer. (30 marks)
- 5.1.2 Describe the anatomical relations of the rectum in a male. (30 marks)
- 5.2 Draw a labeled diagram to show the light microscopic appearance of the rectum. (20 marks)
- 5.3 Describe the embryological development of the rectum and the anal canal. (20 marks)