

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD RADIOLOGY PART I EXAMINATION – DECEMBER, 2023

ESSAY PAPER

Date: 5th December 2023

Time: 9.30 a.m. – 11.30 a.m.

Answer all questions in a separate book.

Answer all questions.

Each question carries 100 marks.

PART A

RADIATION PHYSICS & RADIATION PROTECTION

1.
 - 1.1. Explain how the photoelectric effect influences on image contrast and patient dose in diagnostic radiography. (30 marks)
 - 1.2. Why are Al and Cu filters used in radiography? (15 marks)
 - 1.3. The HVL (Half Value Layer) is an essential component in evaluation of quality of an X ray beam. Define HVL. (15 marks)
 - 1.4. Briefly explain the reading process of the image plate in computed radiography (CR). (25 marks)
 - 1.5. Write down two advantages and one disadvantage of CR over screen-film radiography (15 marks)
2. Briefly describe the physics of the following Doppler ultrasound
 - 2.1. Continuous wave Doppler (15 marks)
 - 2.2. Pulsed Doppler (15 marks)
 - 2.3. Duplex scanning (20 marks)
 - 2.4. Color Doppler (30 marks)
 - 2.5. Power Doppler (20 marks)

PART B
ANATOMY, TECHNIQUES AND RADIOGRAPHY

1.

- 1.1. Draw a labelled line diagram of an axial section through the mid brain as seen on T2W MRI scan at the level of the substantia nigra and red nucleus. (Description of signal intensities are not required). (40 marks)
- 1.2. A 45-year-old man with chronic headache underwent CECT of the brain and diagnosed to have a meningioma. What are the MRI sequences needed for this patient? (30 marks)
- 1.3. Briefly describe the blood supply of the spinal cord. (30 marks)

2.

- 2.1. Draw a labelled line diagram of axial CT section at the level of left main pulmonary artery. (40 marks)
- 2.2. List the methods of radiological investigations to evaluate a mediastinal mass. (20 marks)
- 2.3. Describe the protocol for CT pulmonary angiogram. (Preparation is not required). (40 marks)

3.

- 3.1. Describe the radiological anatomy of submandibular gland and its important relations. (50 marks)
- 3.2. List the imaging modalities available for assessment of submandibular gland. (20 marks)
- 3.3. Describe the radiological technique of submandibular sialography including radiographic views. (patient preparation not needed). (30 marks)

4.

- 4.1. List the normal variants of shoulder joint and acromion. (30 marks)
- 4.2. Briefly describe the radiographic technique of shoulder joint Antero-posterior erect view. (30 marks)
- 4.3. Outline the US scan technique for assessment of tendons of rotator cuff and long head of biceps tendon. (40 marks)