

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (RADIOLOGY) PART I EXAMINATION – DECEMBER 2018

ESSAY PAPER

Date:- 4th December 2018

Time:- 9.30 a.m. – 11.30 a.m.

Answer each question in a separate book.

Answer all questions.

Each question carries 100 marks.

PART A
RADIATION PHYSICS AND RADIATION PROTECTION

1.

- (a) Draw a labelled line diagram of an image intensifier tube used in fluoroscopy. (20 marks)
- (b) Explain the reasons for placing the image intensifier tube above the table and close to the patient in fluoroscopic examinations. (30 marks)
- (c) How do the spatial resolution and image distortion vary when the field of view of an image intensifier tube is reduced? (20 marks)
- (d) Briefly describe three (03) artifacts produced by image intensifier tubes. (30 marks)

2.

- (a) Write an equation for the Doppler shift in ultrasound defining the symbols used. (15 marks)
- (b) Explain why a time varying, Doppler shift frequency spectrum is obtained from a blood vessel. (25 marks)
- (c) Briefly explain the physics of real time colour Doppler ultrasound. (35 marks)
- (d) Explain why the colour region and gray scale region of the real time colour Doppler ultrasound image have different spatial resolutions. (25 marks)

PART B
ANATOMY, TECHNIQUES AND RADIOGRAPHY

1.

- (a) Draw a labelled line diagram of cross section of axial CT of thorax at the level of the carina (T4). (50 marks)
- (b) List the imaging modalities to delineate the thoracic duct. (10 marks)
- (c) Briefly describe the CT protocol for a patient presenting with dyspnoea and suspected pulmonary hypertension excluding patient preparation. (40 marks)

2.

- (a) Briefly describe imaging workout prior to renal transplant of
- (i) Recipient (10 marks)
- (ii) Donor (40 marks)
- (b) Describe the technique and normal appearances of ultrasonographic evaluation of the transplanted kidney. (50 marks)

3.

- (a) Draw a labelled line diagram of a mid-coronal section of a normal neonatal brain as seen through the anterior fontanelle on sonography. (50 marks)
- (b) Briefly outline the imaging modalities to evaluate a scalp lump of a neonate indicating their advantages and disadvantages. (50 marks)

4.

- (a) Describe briefly the radiological anatomy of cerebral venous drainage including common normal variations as seen in MR venography. (50 marks)

A patient presents to the emergency department with a history of recent trauma to right knee.

- (b) Enumerate the x-ray views to assess the knee. (15 marks)
- (c) Briefly describe the radiography of one of the above views. (35 marks)