

# 22547

**22223**

**3 Hours / 70 Marks**

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
  - (7) Preferably write answers in sequential order.

**Marks**

- 1. Attempt any FIVE of the following: **10****
- a) Draw electromagnetic spectrum.
  - b) List benefits of Mobile X-ray technology (four points).
  - c) List any two artifacts of image intensifier.
  - d) Define CT number. Write CT number for water and air.
  - e) Draw neat diagram of ultrasound transducer.
  - f) Write purpose of SPECT scan.
  - g) Write working principle of Thermography.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Write steps of maintenance of X-ray machine.
  - b) Draw block diagram of fluoroscopy machine and describe its working principle.
  - c) Draw the block diagram of MRI machine and describe its working.
  - d) Write steps in installation of ultrasound machine.
- 3. Attempt any THREE of the following:** **12**
- a) Write procedural steps of maintenance in C arm fluoroscopy.
  - b) Draw and describe rotating anode X-ray tube.
  - c) Draw block diagram of CT machine and list clinical application.
  - d) Calculate maximum value of current in milliamperere that can be used at 70 kvp for a single exposure with 30kw X-ray tube.
- 4. Attempt any THREE of the following:** **12**
- a) List medical application of X rays. (any four)
  - b) Draw and describe B scan machine.
  - c) List function of following.
    - i) Filter
    - ii) Collimator
    - iii) X ray table
    - iv) Bucky tray
  - d) Enlist image reconstruction techniques in CT, describe any one.
  - e) Write steps of installation of angiography machine.

**5. Attempt any TWO of the following:****12**

- a) Describe the generation of CT.
- b) List nuclear transducer. Describe any one in detail.
- c) Draw and describe linear switched array and linear phased array in ultrasound.

**6. Attempt any TWO of the following:****12**

- a) Differentiate between radiography and fluoroscopy.  
(any six points)
  - b) Write the doppler effect. Draw and describe doppler ultrasound machine.
  - c) Draw and describe the working of gamma camera in nuclear imaging.
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