

22547

24225

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 answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **10**
 - a) Enlist any two properties of X-rays.
 - b) Write two medical applications of X-ray.
 - c) Define fluoroscopy and Radiography.
 - d) Define CT number.
 - e) Write any two types of transducer arrays used in ultrasound imaging.
 - f) State the functions of Gamma Camera.
 - g) Write working principle of thermography.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Write the risks involve in handling X-ray machine.
 - b) Draw block diagram of fluoroscopy machine and describe its working principle.
 - c) State any four clinical applications of CT machine.
 - d) Write steps in installation of ultrasound machine.
- 3. Attempt any THREE of the following:** **12**
- a) Explain the role of image intensifier in fluoroscopy.
 - b) Draw stationary X-ray tube and describe it.
 - c) Draw block diagram of MRI machine. State its principle.
 - d) X-ray is having KVp rating of 60 KVp, milliamperage rating of 60 mA and X-ray emits for 10 seconds. Calculate the heat unit value (HV) for this tube.
- 4. Attempt any THREE of the following:** **12**
- a) Draw the block diagram of X-ray machine and describe working of it.
 - b) Describe TM scan display of ultrasound with neat diagram.
 - c) Write the maintenance steps in X-ray machine.
 - d) Write the risks involved in handling the MRI machine.
 - e) Write installation steps for Angiography machine.
- 5. Attempt any TWO of the following:** **12**
- a) Enlist any three Image Reconstruction Techniques in CT and explain any one technique with neat sketch.
 - b) Explain installation and maintenance of ultrasound machine.
 - c) Enlist two nuclear transducer and describe any one detail with neat sketch.

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

- a) Describe purpose, procedure and risks involved in SPECT scan.
 - b) Describe –
 - i) Pulse echo techniques
 - ii) Principle of Doppler ultrasound.
 - c) Write installation steps for 'C'-arm fluoroscopy machine and write safety tips for 'C'-arm fluoroscopy.
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