

Q.P. Code : 39003**[Time: 3 Hours]****[Marks: 80]**

Please check whether you have got the right question paper.

- N.B:**
1. Attempt any four questions
 2. Figures to right indicates full marks.
 3. Draw neat labelled diagrams whenever necessary.
 4. Assume suitable data whenever needed.

1. (a) Draw neat labelled diagram of X-ray tube and explain its components. **10**
 (b) Draw diagrams of auto-transformers used in X-ray machine and explain their working. **10**
 2. (a) Explain indirect technique for converting X-ray energy to electrical energy using flat panel detector. **10**
 (b) Explain different types of digital defectors used in digital radiography in short. **10**
 3. (a) With the help of neat sketches, explain fifth generation of CT. What are the advantages of fifth generation. **10**
 (b) Explain gas filled detectors used in CT. **06**
 (c) Explain gamma radiation decay. **04**
 4. (a) Explain the principles of SPECT with the help of block diagram. **10**
 (b) Explain principle of PET along with scattered coincidence, random coincidence and true coincidence. **10**
 5. (a) With the help of block diagram explain working of single channel pulse height analyzer. **10**
 (b) Draw the block diagram of MRI and draw the diagrams of gradient coils used in MRI. **10**
 6. (a) Explain signal to noise ratio in MRI images and factors. **06**
 (b) Explain the characteristics of ultrasound and ultrasonography. **06**
 (c) With the help of block diagram explain construction of ultrasound. **08**
-