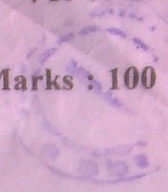


(REVISED COURSE)
(3 Hours)

[Total Marks : 100



- N.B. :** (1) Question No. 1 is **Compulsory**.
 (2) Answer any **four** questions from remaining **six** questions.
 (3) **Figures to right** indicate **full** marks.

- | | | |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 1. (a) | What is free induction decay ? | 10 |
| (b) | Define Pitch and explain the spiral CT. | 10 |
| 2. (a) | What is spin lattice relaxation time ? Explain how spin lattice relaxation time is measured. | 10 |
| (b) | Explain the superconducting magnet used in MRI. | 10 |
| 3. (a) | Explain the spin energy states of hydrogen proton.
A hydrogen proton is placed in magnetic field of 1.5 Tesla calculate the amount of photon energy required to switch from spin up state to spin down state
(Plank's constant = 6.6×10^{-34} J. Sec, Gyromagnetic ratio = 26.8×10^7 Mz/T) | 10 |
| (b) | Explain the SPECT system. | 10 |
| 4. (a) | Draw and explain timing diagram of Pulse echo sequence in MRI. | 10 |
| (b) | How slice selection is carried out in MRI ? | 10 |
| 5. (a) | What are the safety consideration of MRI ? | 10 |
| (b) | Explain the single channel pulse height analyser. | 10 |
| 6. (a) | List and explain the detectors used in CT. | 10 |
| (b) | What are the ideal characteristics of ideal radio pharmaceutical ? | 10 |
| 7. | Write short notes on (any Two) :— | 20 |
| (a) | CT windowing and CT number | |
| (b) | Applied potential tomography | |
| (c) | Gamma camera. | |