Sem-VII medical Imaging-II 2/6/09

Con. 3387-09. VR-5362

(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. **10**
   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)
   (b) Explain the SPECT system. **10**

4. (a) Draw and explain timing diagram of Pulse echo sequence in MRI. **10**
   (b) How slice selection in 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.

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