

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER– II (Old course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 1723102**Date: 10/12/2015****Subject Name: Advanced biomedical imaging****Time: 2:30 pm to 5:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** Explain following terms related to X-ray imaging: **07**
- focal spot size
 - atomic number
 - tube current
 - Bremsstrahlung radiation
- (b)** Write a short note on **07**
- Intensifying Screens and
 - X-Ray Film
- Q.2 (a)** Write an introductory note on necessary image processing for computed tomography. **07**
- (b)** Explain few applications of computed tomography in details. **07**
- OR**
- (b)** Explain multi slice spiral computed tomography. **07**
- Q.3 (a)** Draw and explain basic instrumentation of Single Photon Emission Computed tomography. **07**
- (b)** Explain the principle of annihilation coincidence detection with necessary schematic. **07**
- OR**
- Q.3 (a)** Explain generalized principle of Positron emission tomography. Enlist radionuclides used for PET. **07**
- (b)** Enlist applications of PET and SPECT in medical field. **07**
- Q.4 (a)** Explain following terms related to Ultrasound imaging **07**
- Acoustic Impedance
 - Axial and Lateral Resolution
 - Time Gain compensation
 - Doppler effect
- (b)** Write a short note on different types of coils used in MRI. **07**
- OR**
- Q.4 (a)** Compare all diagnostic mode of ultrasound imaging system. **07**
- (b)** Explain basic working concept of MRI. What is the need of RF pulse in MRI? **07**
- Q.5 (a)** Write a short note on Functional Magnetic Resonance Imaging. **07**
- (b)** Explain applications of Magnetic Particle Imaging in details. **07**
- OR**
- Q.5 (a)** Explain imaging concept of thermal imaging techniques with applications. **07**
- (b)** Explain role of Nano scale imaging in medical field. **07**
