

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME Semester –II Examination Dec. - 2011

Subject code: 1723102

Date: 12/12/2011

Subject Name: Advanced Biomedical Imaging

Time: 2.30 pm – 05.00 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 the different part of x-ray machine with block diagram. **07**
(b) Distinguish between mammography and chest radiography. **07**

- Q.2** (a) What are the needs of high speed CT? Explain Spiral CT. **07**
(b) Explain EBCT and differentiate it with conventional CT technique. **07**

OR

- (b) What are the different methods available for image reconstruction in CT? Explain any one with example. **07**

- Q.3** (a) Discuss the principles of MRI. With simplified block diagram, explain working of MRI system. **07**
(b) Differentiate partial Fourier reconstruction with reduced Gibbs ringing methods for MRI reconstruction. **07**

OR

- Q.3** (a) Discuss Functional brain imaging. **07**
(b) Discuss the instrumentation for SPECT and iterative reconstruction algorithm for image reconstruction. **07**

- Q.4** (a) What are the applications of PET? Discuss the current status of PET imaging technique. **07**
(b) Explain the construction of ultrasound transducer for imaging. What is Fennel and Fresnel region? **07**

OR

- Q.4** (a) Discuss the possible application of optical tomography. **07**
(b) Differentiate structural and functional imaging modalities for medical imaging. **07**

- Q.5** (a) Discuss the principal and working of thermal camera for medical imaging. **07**
(b) What is Scintigraphy? What are its applications? **07**

OR

- Q.5** (a) Write short note on: Photoacoustic Imaging. **07**
(b) Explain effects of static magnetic field in MRI. **07**
