

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013

Subject code: 1723102

Date: 27-12-2013

Subject Name: Advanced Biomedical Imaging

Time: 10.30 am – 01.00 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) Write a short note on Anger position network used in Nuclear medicine. **07**
(b) Explain Instrumentation of The Gamma Camera with necessary diagram. **07**

- Q.2** (a) Explain fan beam reconstruction method in CT scan. **07**
(b) Explain working principle of the annihilation coincidence detection circuit used in PET. **07**

OR

- (b) Explain production of Radionuclides. **07**

- Q.3** (a) Write a short note on X-Ray Energy Spectrum. **07**
(b) Explain scanner instrumentation and detectors for computed tomography. **07**

OR

- Q.3** (a) Explain Linear and mass attenuation coefficients of x-ray in tissue. **07**
(b) Explain Iterative reconstruction method for Image processing in CT scan. **07**

- Q.4** (a) Explain basic illustration of Linear phased array and principle of the Time-gain compensation mechanism in Ultrasound imaging. **07**
(b) Explain Instrumentation for Planar X-ray imaging. **07**

OR

- Q.4** (a) Explain ultrasonic beam energy loss mechanisms in tissues. **07**
(b) Compare all modes of Ultrasound scanning. **07**

- Q.5** (a) Write a short note on Magnetic Resonance Spectroscopy. **08**
(b) Explain slice select gradient for MRI. How to change the slice thickness? **06**

OR

- Q.5** (a) Explain phase encoding method used for Image construction in MRI. **07**
(b) Explain working principle of thermal Imaging techniques with its Schematic diagram. **07**
