

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-VII(NEW) • EXAMINATION – WINTER 2016**

**Subject Code:2170303****Date:18/11/2016****Subject Name:Medical Imaging techniques****Time:10.30 AM to 1.00 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 Photoelectric effect. Differentiate between Elastic and Inelastic Scattering. **07**  
 (b) Write a short note on various types of Radiation Detectors. **07**
- Q.2** (a) Explain Fluoroscopy as imaging technique with necessary Diagram. **07**  
 (b) Draw & explain stationary anode type x-ray tube with schematic diagram **07**
- OR**
- (b) Explain single photon emission computed tomography. **07**
- Q.3** (a) Explain different operational modes of CT Scan machine. **07**  
 (b) Write a short note on Positron Emission Tomography. **07**
- OR**
- Q.3** (a) Write a note on following terms: **07**  
 1) Explain the use of slip rings in CT-Scan machine.  
 2) Hounsfield Unit  
 (b) Explain Xeroradiography as imaging technique with necessary Diagram. **07**
- Q.4** (a) Explain working Principle of MRI Machine. **07**  
 (b) Explain working of real time Brightness mode scanners of Ultrasound. **07**
- OR**
- Q.4** (a) What is Piezoelectric effect? Explain construction of Single element Ultrasonic transducer with the concept of Mechanical matching. **07**  
 (b) Explain A-scan system of ultrasonography with block diagram. **07**
- Q.5** (a) What is Thermal Imaging? Explain Infrared Thermography in detail. **07**  
 (b) Write a Short note on Gamma camera. **07**
- OR**
- Q.5** (a) Describe advantages of MRI over CT Imaging systems. And Explain Biological effects of NMR imaging system. **07**  
 (b) Draw block diagram of color Doppler flow mapping system and explain it **07**

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