Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 170303 **Date: 23/11/2016**

Subject Name: Medical Imaging Technology

Time: 10:30 AM to 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)**	Explain wave particle duality. What is the nature of X-rays?	**07**
	(b)	How does radiation interact with matter? Explain in detail.	**07**
Q.2	**(a)**	What is the principle of rotating anode x-ray tube? Explain in detail rotating mechanism employed in it.	**07**
	(b)	How do kVp, mAs and added filters affect X-ray emission spectrum?	**07**
		OR	
	(b)	Write short note on types of X-ray detectors.	**07**
Q.3	**(a)**	Explain digital radiography. What are advantages and disadvantages of this technique?	**07**
	(b)	Write a note on image reconstruction of CT images.	**07**
		OR	
Q.3	**(a)**	Explain the generations of CT scan.	**07**
	(b)	How x-ray images can be converted into three dimensions?	**07**
Q.4	**(a)**	What is the principle of Ultrasonography? Explain A mode and B mode with block diagram.	**07**
	(b)	Explain in detail mammography technique.	**07**
		OR	
Q.4	**(a)**	Explain Pulse Doppler imaging system.	**07**
	(b)	Write a note on biological effects of ultrasound.	**07**
Q.5	**(a)**	What is the larmor frequency in MRI? Explain the basic principle of MRI.	**07**
	(b)	Write a note on Gamma camera with neat diagram.	**07**
		OR	
Q.5	**(a)**	Explain the following techniques with their principle: (i) SPECT, (ii) PET	**07**
	(b)	State principle of infrared imaging. What is the use of this technique? Define transilumination.	**07**

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