Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2133901 Date: 30-12-2014

Subject Name: Fundamentals of Solid State Technology

Time: 02.30 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)**	Define Unit cell. Explain Seven Crystal System.	**07**
	(b)	Explain Features of miller indices. Draw (100) Plain.	**07**
Q.2	**(a)**	Explain defects in solid materials.	**07**
	(b)	Explain X-ray diffraction Technique for identify crystal structure.	**07**
		OR	
	(b)	Write Applications of X-Ray diffraction techniques	**07**
Q.3	**(a)**	Explain Lattice vibration in Solids	**07**
	(b)	Write notes on thermal heat capacity in solids	**07**
		OR	
Q.3	**(a)**	Explain Einstein theory for molar heat capacity.	**07**
	(b)	Describe limitation of Einstein theory	**07**
Q.4	**(a)**	Define extrinsic semiconductor. Describe acceptor and donor level in extrinsic semiconductor.	**07**
	(b)	Explain band diagram of p-n junction diode.	**07**
		OR	
Q.4	**(a)**	Explain Hall effect with neat diagram.	**07**
	(b)	Explain Rectification by p-n Junction diode	**07**
Q.5	**(a)**	Write Applications of Dielectric Materials.	**07**
	(b)	Define polarization. Explain different types of polarization in dielectric materials	**07**
		OR	
Q.5	**(a)**	Write short note on magnetic materials.	**07**
	(b)	Describe optical and thermal properties of semiconductor	**07**

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