Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–III • EXAMINATION – SUMMER 2013

Subject Code: X 30901 **Date: 09-05-2013**

Subject Name: Basic Electronics

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)**	Explain energy band diagram of insulator, semiconductor and metal.	**07**
	(b)	Explain formation of n type and p type semiconductors.	**07**
Q.2	**(a)**	Explain Drift current and Diffusion current.	**07**
	(b)	Explain mobility and conductivity. Also derive equation of each.	**07**
		OR	
	(b)	Explain Hall effect in detail.	**07**
Q.3	**(a)**	What is transition capacitance? Derive equation for it.	**07**
	(b)	Explain forward and reverse biasing of diode.	**07**
		OR	
Q.3	**(a)**	Draw and explain the Volt-ampere characteristic of a PN junction diode.	**07**
	(b)	Explain zener diode as a voltage regulator.	**07**
Q.4	**(a)**	Draw the circuit diagram explain the working of a full wave rectifier with necessary waveforms.	**07**
	(b)	Explain the working of transistor in CE configuration. Also draw its input-output characteristics.	**07**
		OR	
Q.4	**(a)**	Explain PN junction as a rectifier.	**07**
	(b)	Compare CB, CE and CC transistor configurations. Which is the widely used configuration? Why.	**07**
Q.5	**(a)**	State different biasing techniques used fir biasing transistor amplifiers. Explain any one in detailed.	**07**
	(b)	Explain construction and working of n- channel JFET.	**07**
		OR	
Q.5	**(a)**	Explain in details : (1) Thermal runaway (2) Stability factor.	**07**
	(b)	Classify the power amplifiers based on position of Q point, Operating cycle and efficiency.	**07**

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