Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER 2013

Subject Code: 151703 **Date: 02-12-2013**

Subject Name: Electronics in Industries

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)**	Classify power diodes and explain fast recovery diode in detail.	**07**
	(b)	Write a note on three-phase double star uncontrolled rectifier.	**07**
Q.2	**(a)**	Explain half wave controlled rectifier with resistive-inductive load.	**07**
	(b)	Explain full wave controlled rectifier with transformer leakage reactance and load reactance.	**07**
		OR	
	(b)	Describe six phase full wave controlled bridge rectifier.	**07**
Q.3	**(a)**	Explain three phase center-tapped full wave uncontrolled rectifier.	**07**
	(b)	With the load resistance of 10 KΩ in a full-wave uncontrolled rectifier, the input voltage to each diode is 400 sin 2π50t. Calculate the maximum value of current, the average current, the RMS current, form factor, ripple factor, DC power output and input power output.	**07**
		OR	
Q.3	**(a)**	Explain three phase half wave uncontrolled rectifier.	**07**
	(b)	With equations and waveform explain half-wave uncontrolled rectifier with resistive load.	**07**
Q.4	**(a)**	Determine V_p, R_{max} and R_{min} for a PUT oscillator. Assume V_{BB}=12 V, R=20 KΩ, C=1 pF, R_{B1}=10 KΩ, R_{B2}=5 KΩ, I_p=100 μA, V_v=1 V and I_v=5.5 mA.	**07**
	(b)	Explain unijunction transistor, its biasing and application.	**07**
		OR	
Q.4	**(a)**	Mention Gate characteristic of thyristor with neat sketch.	**07**
	(b)	Write about Diode-Resistance-Capacitance firing circuit.	**07**
Q.5	**(a)**	Explain steady state characteristics and switching characteristics of power BJT.	**07**
	(b)	Describe Shockley diode with neat sketch of its V-I characteristic, diode analog, sectional view and symbol.	**07**
		OR	
Q.5	**(a)**	Write a note on transistor analogue of a thyristor.	**07**
	(b)	Explain metal oxide controlled thyristor in detail.	**07**

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