Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 131101 **Date: 05/06/2017**

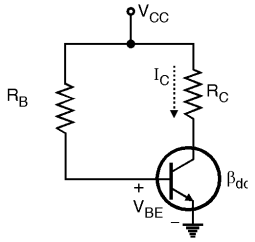
Subject Name: Basic Electronics

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 energy band diagram of insulator, semiconductor and conductor.	**07**
	(b)	Explain Intrinsic and Extrinsic semiconductors.	**07**
Q.2	**(a)**	Explain i) Zener diode, ii) Photodiode.	**07**
	(b)	Explain the operation of a P-N junction diode in the forward biased condition and draw the forward characteristics.	**07**
		OR	
	(b)	Write a short note on Tunnel diode. Explain the V-I characteristics of the Tunnel diode.	**07**
Q.3	**(a)**	Draw the circuit diagram of full wave bridge rectifier and draw its input and output waveforms. Also state the equation for D.C. load current.	**07**
	(b)	Draw the block diagram of a regulated D.C. power supply and explain the function of each block in it with relevant waveforms.	**07**
		OR	
Q.3	**(a)**	Explain the different types of clipping circuit. Draw the necessary waveforms.	**07**
	(b)	Draw switching waveforms of diode and explain i) Storage Time (t_s) ii) Transition Time (t_t) , iii) Reverse Recovery time (t_{rr})	**07**
Q.4	**(a)**	List the three source of instability of collector current and define three stability factors.	**07**
	(b)	Explain i) The Early Effect ii) Avalanche Breakdown in Zener diode	**07**
		OR	
Q.4	**(a)**	Draw Voltage divider bias circuit. How it stabilizes operating point?	**07**
	(b)	State and prove Miller's theorem and its dual.	**07**
Q.5	**(a)**	Give constructional details of JFET and give its characteristics. Why FET is called voltage control devices?	**07**
	(b)	Give the point of difference between BJT and FET. Also explain FET as voltage variable resistor.	**07**
		OR	
Q.5	**(a)**	Compare different types of power amplifiers based on the following factors: i) Conduction angele ii) Position of Q Point iii) Efficiency iv) Distortion	**07**
	(b)	In a fixed bias circuit using silicon npn transistor which has βdc = 150. The dc biasing point is VCE = 5V & Ic = 5 mA , VCC =10V. Find out value of Rb & Rc.	**07**



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