Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (NEW)• EXAMINATION – SUMMER 2015

Subject Code: 2130305 **Date: 09/06/2015**

Subject Name: Analog Circuits - I

Time: 02.30pm-05.00pm **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)**	Draw the internal block diagram of 555 timer IC.	**07**
	(b)	1. Derive relation between α and ß for a transistor. 2. Why CE configuration is preferred for amplification?	**07**
Q.2	**(a)**	Explain the working of a triangular and square wave generator. Design a triangular and square wave generator for a frequency of oscillation of 3 KHz.	**07**
	(b)	1. Does thermal runaway take place in FET? Why? 2. Define parameters of FET and state relationship among them.	**07**
		OR	
	(b)	Compare V-I characteristics of Silicon and Germanium p-n junction diode.	**07**
Q.3	**(a)**	Explain OP-AMP application as integrator.	**07**
	(b)	Explain the operation of Emitter follower amplifier. Why is it named as emitter follower?	**07**
		OR	
Q.3	**(a)**	Draw CE transistor configuration and give its input and output characteristics. Also derive the relation between current gain of CE, CB and CC configurations.	**07**
	(b)	Draw and explain the block diagram of an Op-Amp.	**07**
Q.4	**(a)**	Design RC phase shift oscillator for the frequency of 3kHz.	**07**
	(b)	State and explain any seven characteristics of an ideal Op-Amp.	**07**
		OR	
Q.4	**(a)**	What is CMRR? What is the significance of CMRR? List and Explain the methods to improve the CMMR.	**07**
	(b)	What is oscillator? Explain the concept of oscillation. Explain the concept of oscillation properly with Barkhausen criteria.	**07**
Q.5	**(a)**	Draw the block diagram of a voltage series feedback amplifier and derive the equation for input impedance, output impedance and the voltage gain.	**07**
	(b)	What do you understand by precision rectifier? Draw full wave precision rectifier circuit and explain with necessary waveforms.	**07**
		OR	
Q.5	**(a)**	Explain the application of op-amp as a subtractor and summing amplifier.	**07**
	(b)	State the use of clipping circuits. Discuss with neat sketch working of a bias Series clipper.	**07**

****