Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV EXAMINATION – WINTER 2015

Subject Code: 141101 **Date:30/12/2015**

Subject Name: Advance Electronics

Time: 02:30pm to 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)**	Explain the parameters those affecting to the transistor at high frequencies. Draw the hybrid π model for CE configuration and also explain why we cannot use the h-parameters for the analysis at high frequencies.	**07**
	(b)	Explain Cascaded Amplifier and also Derive the expression for the overall gain in decibels of an n-stage cascaded amplifier and why to express gain in dB?	**07**
Q.2	**(a)**	Compare different types of power amplifier based on conduction angle, position of Q-point, efficiency and distortion.	**07**
	(b)	Explain the single stage CE transistor amplifier response. Derive the expression for transfer function for exact analysis.	**07**
		OR	
	(b)	What is feedback? List the advantages of negative feedback. Derive relation between gain with and without feedback in a transistor amplifier.	**07**
Q.3	**(a)**	Explain Clapp Oscillator using transistor and FET.	**07**
	(b)	Design a Hartley oscillator using BJT for an output frequency of 50 KHz. Assume V_E=3V , V_{CEQ}=3V , V_{CC}=10V , I_{CQ}=1mA , β=50 & C=0.01μf	**07**
		OR	
Q.3	**(a)**	State and explain any seven characteristics of an ideal Op-Amp.	**07**
	(b)	Explain the Features of IC 741 and Pin Configuration with diagram.	**07**
Q.4	**(a)**	Explain Voltage series, Voltage shunt, Current series and Current shunt Feedbacks in brief.	**07**
	(b)	What is an Oscillator? Explain the concept of oscillator. Explain the concept of oscillator properly with Barkhausen Criteria.	**07**
		OR	
Q.4	**(a)**	Explain the analysis of Dual Input and Balanced Output Differential Amplifier.	**07**
	(b)	Define the Following Terms: (1)Slew rate (2)PSRR (3)Fan-in and Fan-out (4)Noise immunity (5) Propagation Delay (6)Figure of merit (7)Gain bandwidth product	**07**
Q.5	**(a)**	List the logic family. Give Comparison of each of them.	**07**
	(b)	Explain Dual slope A/D converter.	**07**
		OR	
Q.5	**(a)**	What is Digital to Analog Convertor? Draw and Explain R-2R DAC? Also give the advantages and disadvantages of R-2R Digital to Analog convertor.	**07**
	(b)	Explain Resistor Transistor Logic and Direct Coupled Transistor Logic with advantages and disadvantages.	**07**

****