Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – IV • EXAMINATION – WINTER 2012

Subject code: 141101 Date: 28/12/2012

Subject Name: Advance Electronics

Time: 02.30 pm - 05.00 pm Total Marks: 70

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	State the behavior of transistor at high frequencies and explain why we cannot use the h-parameters for the analysis at high frequencies.	**07**
	(b)	Explain the classification of amplifiers based on position of operating point(Q – point).	**07**
Q.2	**(a)**	State the advantages, disadvantages and applications of RC coupled amplifiers.	**07**
	(b)	Explain the advantages and disadvantages of negative feedback.	**07**
		OR	
	(b)	Define the following terms: : (1) Slew rate (2) CMRR (3) PSRR (4)Noise margin (5) fan-in (6) Gain bandwidth product (7)Figure of merit for logic families	**07**
Q.3	**(a)**	Give the complete Classification of Oscillators.	**07**
	(b)	Design RC phase shift oscillator for the frequency of 6 kHz.	**07**
		OR	
Q.3	**(a)**	State and explain any seven characteristics of an ideal Op-Amp.	**07**
	(b)	Draw and explain the block diagram of an Op-Amp.	**07**
Q.4	**(a)**	State the advantages and disadvantages of TTL.	**07**
	(b)	Draw the symbol and AC equivalent circuit of a Crystal oscillator and explain the principle of operation of Crystal Oscillator.	**07**
		OR	
Q.4	**(a)**	Using an OP-AMP, draw the functional diagram of a successive approximation ADC and explain its working.	**07**
	(b)	What is Digital to Analog Convertor? Draw and Explain R-2R DAC.	**07**
Q.5	**(a)**	Classify the logic families. Give comparisons with the advantages and disadvantages of each logic families.	**07**
	(b)	A quartz crystal has following constants: L = 0.06 H, C1 = 0.01 pf, C2 = 12 pf and R = 500 Ω. Calculate the values of series and parallel resonant frequencies. (Here C1 is the capacitor in the equivalent circuit of crystal and C2 is the mounting capacitance.)	**07**
		OR	
Q.5	**(a)**	Explain Dual slope A/D converter.	**07**
	(b)	Switched capacitor type DAC.	**07**

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