Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Semester-IV- Examination June- 2011

Subject code: 141101

Subject Name: Advance Electronics

Date:08/06/2011 **Time : 10:30 am to 1:00 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 working principal of colpitt's oscillator. Also derive the expression for frequency of oscillations. **07**

(b) Write short note on Hybrid π model for a transistor on CE configuration and its circuit component. **07**

Q.2 **(a)** What are the four possible topologies of feed back amplifier? Draw each with necessary details showing Vi, Vo, Ri, Ro, Ii, and Io. Derive input and output resistance for each topology. **07**

(b) Explain the working of RC coupled amplifier with neat diagram. Also obtain its frequency response. **07**

OR

(b) Determine the voltage gain, input, and output impedance with feedback for voltage series feedback having A = -100, Ri = 10 kΩ, Ro = 20 kΩ for feedback of (a) β = -0.1 (b) β = -0.5. **07**

Q.3 **(a)** What is meant by differential amplifier ? And also explain the working of current source, with a circuit diagram. **07**

(b) Determine output voltage of differential amplifier for input voltage of 300 μV& 240 μV. Differential gain is 5000 & CMRR is 100. **07**

OR

Q.3 **(a)** Draw the circuit and explain the operation of transistorized Wien bridge oscillator. **07**

(b) For Hartley oscillators L1 = 1mH, L2 = 100 μH, m = 50 μH, C =100 pF. Find its frequency. **07**

Q.4 **(a)** Write short note on: Classification of amplifiers. **07**

(b) Define following parameters. **07**

I) Fan-out,
II) Propagation delay,
III) Speed power product,
IV) Slew rate,
V) CMRR,
VI) Gain bandwidth product,
VII) Power dissipation.

OR

Q.4 **(a)** Using an OP-AMP, draw the functional diagram of a successive approximation ADC and explain its working. **07**

	(b)	Explain transfer characteristics of differential amplifiers	**07**
Q.5	**(a)**	Write short note on: Validity of Hybrid – PI model.	**07**
	(b)	Give the comparison between various logic families.	**07**

OR

Q.5	**(a)**	State Barkhausen in criteria for oscillation and Also explain stability criteria for sinusoidal oscillator.	**07**
	(b)	Calculate the values of resistors and reference voltage if resolution required is 0.5 V for 4-bit R/2R ladder type DAC.	**07**

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