Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2013

Subject code: 715403N **Date: 03-01-2014**

Subject Name: Electronic System Design

Time: 10.30 am – 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)**	Draw the typical circuit diagram of OP-AMP in inverting and non-inverting mode with two resistors. Obtain expressions of their voltage gain.	**07**
	(b)	Explain the following parameters of OP-AMP: (i) Slew rate (ii) Common Mode Rejection Ratio (iii) Power Supply rejection Ratio (iv) Input Offset Voltage	**07**
Q.2	**(a)**	Explain the following methods of D/A conversion: (i) Parallel method (ii) Weighting method (iii) Counter method	**07**
	(b)	Draw the circuit diagram of a full wave bridge rectifier. Obtain the expression of average and rms value of load voltage for resistive load.	**07**
		OR	
	(b)	Explain the successive approximation A/D converter.	**07**
Q.3	**(a)**	Draw the basic circuit diagram of a BiCMOS inverter with resistive load. Discuss the switching delay in BiCMOS logic circuits.	**07**
	(b)	Write a short note on BiCMOS applications.	**07**
		OR	
Q.3	**(a)**	Write short notes on: (i) Controllability and Observability (ii) Ad Hoc testable Design Techniques	**07**
	(b)	Obtain the expressions of V_{OH} , V_{OL} , V_{IL} and V_{IH} of a resistive load CMOS inverter.	**07**
Q.4	**(a)**	Write short notes on: (i) Scan-Based Techniques (ii) Buil-In Self Test Techniques	**07**
	(b)	Consider a CMOS inverter circuit with the following parameters: V_{DD}= 3.3 V $V_{TO,n}$ = 0.6 V $V_{TO,p}$ = - 0.7 V K_n = 200 μ A / V^2 K_p = 80 μ A / V^2 K_R = 2.5 Calculate the noise margins of the circuit.	**07**
		OR	

Q.4	**(a)**	Draw the models for Electro Static Discharge testing. Also draw a typical ESD protection network circuit.	**07**
	(b)	Write a short note on Electromagnetic Compatibilty.	**07**
Q.5	**(a)**	Obtain the expression of switching power dissipation of CMOS inverter.	**07**
	(b)	Discuss the issues related to grounding of Electronic Systems in brief.	**07**
		OR	
Q.5	**(a)**	Draw the typical circuit diagrams of a typical active low pass , high pass and band pass filters.	**07**
	(b)	Enlist the important packaging concerns of Electronic circuits. Explain the following package types: DIP,PGA,CCP,QFP,MCM	**07**

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