Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

Subject code: 2715403 **Date: 12-01-2015**

Subject Name: Electronics System Design

Time: 02:30 pm - 05:00 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)**	Design the band pass filter so that (a) fc= 1 kHz, Q = 3 and Gain = 10. (b) Change the center frequency to 1.5 kHz, keeping Gain and BW constant.	**07**
	(b)	(1) Define (i) Resolution (ii) Offset error and (iii) gain error of an ADC.	**03**
		(2)Write difference between unipolar and bipolar DAC. Which one you will prefer?	**03**
		(3) The basic step of a 9 bit DAC is 10.3 mV. If 000000000 represents 0V, what output is produced is the input is 101101111?	**01**
Q.2	**(a)**	Explain benefits and issues on migration of 5V to 3.3V logic.	**07**
	(b)	Write comparison between CMOS and BiCMOS logic family.	**07**
		OR	
	(b)	Define following Power Supply Characteristics: (i) Form Factor (ii) Efficiency (iii) Ripple Factor (iv) Load Regulation.	**07**
Q.3	**(a)**	Explain methods of noise coupling.	**07**
	(b)	Explain Multipoint Ground Systems and Hybrid Grounds.	**07**
		OR	
Q.3	**(a)**	Define Input offset current and Input offset voltage. Explain any two techniques to reduce these two quantities.	**07**
	(b)	Draw a three port isolation amplifier block diagram and explain in brief.	**07**
Q.4	**(a)**	Explain Ground loops.	**07**
	(b)	Write short note on óSoftware and ESD Protection.ô	**07**
		OR	
Q.4	**(a)**	If polyester and aluminum are rubbed together and then separated, what will be the polarity of the charge on each material? Explain static generation.	**07**
	(b)	Write short note on packagingôs influence and its factors.	**07**
Q.5	**(a)**	Draw a second order Sallen Key low pass filter. Derive its generalized transfer function and show that for a damping factor of 1.414, it works as a butterworth filter.	**07**
	(b)	Explain Safety Grounds and Signal Grounds.	**07**
		OR	
Q.5	**(a)**	Explain R ï 2R Ladder DAC.	**07**
	(b)	What is the difference between passive and active components? Choose any one active component and write any four technical specifications for this component which you will search in its data sheet.	**07**

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