Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013

Subject code: 725203 **Date: 03-06-2013**

Subject Name: Analog and Mixed Signal IC 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)**	List MOSFET second order effects and discuss any one in detail.	**07**
	(b)	Draw the CS (Common Source) stage with diode connected load and small signal equivalent circuit of it. Derive voltage gain for the same.	**07**
Q.2	**(a)**	Draw the Common Drain stage and small signal equivalent circuit of it. Derive voltage gain for the same.	**07**
	(b)	List different specifications of data converter and explain any three in brief.	**07**
		OR	
	(b)	Discuss performance parameters of Operational amplifier.	**07**
Q.3	**(a)**	Draw and explain Gilbert cell.	**07**
	(b)	Draw the circuit diagram of a single stage operational amplifier and explain the operation.	**07**
		OR	
Q.3	**(a)**	Explain Thermal Noise and Flicker noise.	**07**
	(b)	Discuss simple current mirror circuit and find current gain and output impedance.	**07**
Q.4	**(a)**	Discuss characteristics of PLL and charge pump PLL.	**07**
	(b)	Draw and explain current steering DAC.	**07**
		OR	
Q.4	**(a)**	Discuss different building blocks that are required for constructing switch capacitor circuits.	**07**
	(b)	Discuss temperature independent references in brief.	**07**
Q.5	**(a)**	Discuss stability and also explain one-pole, two poles and Three poles system.	**07**
	(b)	Explain Op-amp gain boosting.	**07**
		OR	
Q.5	**(a)**	Draw high frequency equivalent circuit of Source Follower and derive input and output impedance.	**07**
	(b)	List all the feedback topologies and discuss any two in detail	**07**

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