GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER- I (New course)• REMEDIAL EXAMINATION - SUMMER 2015

Subject Code: 2712602 Date:13/0: Subject Name: CMOS CIRCUIT DESIGN-I			15
Tir	ne: truction 1.	10:30 am to 1:00 pm Total Marks: 7 ons: Attempt all questions. Make suitable assumptions wherever necessary.	70
Q.1	(a) (b)	Write all second order effects and discuss any one in detail. Discuss Barrel shifter and logarithmic shifter in brief.	07 07
Q.2	(a) (b)	Write short note on MOS device capacitances. Derive $I_{D(Sat)}$ and $I_{D(Lin)}$ for n channel MOSFET. OR	07 07
	(b)	Explain Gilbert cell.	07
Q.3	(a) (b)	Draw Common Gate stage circuit and derive voltage gain. Discuss Qualitative Analysis of basic differential pair. OR	07 07
Q.3	(a)	Explain the following: (I) Switching Threshold (II) Noise Margins	07
	(b)	Draw CS stage with Diode connected load and derive voltage gain.	07
Q.4	(a)	Discuss Manchester Carry-Chain adder with static and dynamic implementation.	07
	(b)	Discuss Dynamic Supply Voltage scaling. (DVS) OR	07
Q.4	(a)	Briefly explain output swing and linearity as performance parameter of opamps and Draw simple op amp topologies.	07
	(b)	Explain slew rate in op-amp.	07
Q.5	(a)	Draw high ófrequency equivalent circuit of Source follower and derive input impedance.	07
	(b)	Draw and discuss Bode plots of loop gain for a two-pole system and for a three pole system.	07
		OR	
Q.5	(a) (b)	Discuss Cascode Current Mirrors. Draw 4x4 bit array multiplier for unsigned numbers and discuss it in brief.	07 07
