

--	--	--	--	--	--	--	--	--	--

M.Tech. Degree Examination, May/June 2010
Design of Analog and Mixed Mode VLSI Circuits

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Explain the operation of common source stage with resistive load and diode load. (10 Marks)
- b. Explain the operation of folded cascade amplifier. (10 Marks)
- 2 a. With neat circuit diagrams, explain the operation of Gilbert cell. (10 Marks)
- b. Write neat circuit diagrams and explain the operation of cascade current mirrors. (10 Marks)
- 3 a. Draw the small signal model of differential amplifier. Using this model obtain the expression for A_v and r_{out} . (10 Marks)
- b. Describe in steps the design procedure of unbuffered op-amp circuit. (10 Marks)
- 4 a. Explain the principle of band gap reference with the help of neat labeled block diagram. (10 Marks)
- b. Write a technical note on switched capacitor integrator. (10 Marks)
- 5 a. Derive an expression for negative PSRR. (10 Marks)
- b. What is a mixer? Discuss the design aspects of a CMOS mixer. (10 Marks)
- 6 a. Draw the circuit of parallel ADC and explain its working. (10 Marks)
- b. Write a note on crossed coupled oscillator. (10 Marks)
- 7 a. Explain R-2R ladder network with necessary diagrams and equations. (10 Marks)
- b. Explain the construction and working of delta-sigma ($\Delta\Sigma$) modulator with the help of block diagram. (10 Marks)
- 8 Write a technical note on the following:
 - a. PLL as frequency synthesizer. (10 Marks)
 - b. Miller compensation for 2 stage op-amp. (10 Marks)