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06EC63

Sixth Semester B.E. Degree Examination, Dec.2014/Jan.2015
Analog & Mixed Mode VLSI Design

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. State and explain specifications of ADC. **(12 Marks)**

b. State the reasons for the pedestal error, droop aperture error and sampling error. **(08 Marks)**

2 a. Describe the pipelined ADC with a neat diagram. **(10 Marks)**

b. Explain qualitatively the architecture and working of charge scaling DACs. **(10 Marks)**

3 a. Explain the principle of single slope ADC and the problems associated with it. **(10 Marks)**

b. Briefly explain the block diagram of a 2-step flash ADC and its working. **(10 Marks)**

4 a. Explain the working of a voltage comparator with the help of a block diagram. **(10 Marks)**

b. Explain the principle of an analog multiplier. **(05 Marks)**

c. Briefly explain CMOS analog multiplier with the help of a circuit diagram. **(05 Marks)**

PART – B

5 a. Draw the circuit arrangement used for decimation and averaging and explain the same. Determine the transfer function of the same. **(10 Marks)**

b. Define SNR, effective number of bits and clock jitter in mixed signal circuits qualitatively. **(10 Marks)**

6 a. Describe CMOS process flow with neat sketches. **(10 Marks)**

b. Explain how capacitor and resistor elements are fabricated in submicron technology. **(07 Marks)**

c. Explain MOSFET as a switch. **(03 Marks)**

7 a. What are delay elements? Explain how they are realized using pass transistors, inverters and clocked CMOS and TSPC circuits. **(10 Marks)**

b. Realize a 4-bit pipelined adder using latches and explain its operation. **(05 Marks)**

c. Implement full adder using dynamic logic and explain. **(05 Marks)**

8 a. Explain with the help of circuit diagrams, the technique of making the slew rate concern in the design of opamp. **(10 Marks)**

b. Explain the limitation of an inverter at the output of an opamp, with the help of its transfer curve. How is it overcome? **(05 Marks)**

c. Discuss circuit noise in an opamp. **(05 Marks)**

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