5. Distinguish oversampling without noise shaping and with noise shaping. 5+5=10

6. (a) Discuss the sampling switches utilized in switched capacitor circuit. 5

   (b) Determine the transfer function for both open-loop and closed loop system for linear model of type I PLL. 5

7. (a) Explain the basic charge pump PLL. 5

   (b) What are the issues in designing flash A/D converters? Discuss in brief. 5

8. (a) Explain the block diagram of second order Delta-Sigma modulator 6

   (b) Write about binary-weighted resistor-type DAC. 4

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B. Tech Odd Semester Examination, February, 2023

Electronics & Communication Engineering

(7th Semester)

Course No.: ECE-701

(Mixed Signal Design)

Full Marks: 50
Pass Marks: 15

Time: 2 hours

Note:
1. Attempt any five questions.
2. Begin each answer in a new page.
3. Answer parts of a question at a place.
4. Assume reasonable data wherever required.
5. The figures in the right margin indicate full marks for the question.
6. All the mathematical symbols and abbreviations have their usual meanings.

1. What are the advantages of switched capacitor circuits. Explain the working of a switched capacitor first-order low-pass filter with circuit diagram 2+8=10

2. What is a PLL and what are basic building blocks of PLL? What are lock range and capture range of PLL? Discuss the applications of PLL. 1+1+2+6=10

3. (a) Draw and explain the circuit diagram of register-string 3-bit digital-to -analog converter with digital decoding. 4

   (b) Design a 4-bit folded-string digital-to-analog converter and explain its operation. 3+3=6

4. Give the classification of ADC architectures based on the conversion rate. What is a flash converter? Discuss the working of a 3-bit flash A/D Converter 3+1+6=10