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**Question Paper Code : 63063**

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015

Elective

Applied Electronics

AP 7010 — DATA CONVERTERS

(Common to M.E. VLSI Design)

(Regulation 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Miller Theorem.
2. Mention the potential applications of sample and hold circuits.
3. What is the concept of switched capacitor amplifier?
4. Enumerate the parameters of a multistage amplifier.
5. What is the principle of R- 2R ladder DAC?
6. What are the features of current steering DAC architecture?
7. Why Flash architecture is called so? Write its applications.
8. What is the function of the successive approximation register in ADC?
9. Define Slew Rate of an Op amp. Write its significance.
10. List the typical parameters of an Op amp.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the concepts of sampling switches. (8)  
(ii) Explain the principle of Sample and hold circuit with a neat diagram. (8)

Or

- (b) Explain the principle of recycling architecture with a neat diagram. (16)



12. (a) (i) Explain the operation of switched capacitor amplifier with a circuit diagram. (8)
- (ii) Give a detailed account on "Latched comparators". (8)

Or

- (b) Explain the principle of operation of single stage amplifier as comparator with neat diagram. (16)
13. (a) (i) With a neat circuit diagram, explain the concept of a Binary weighted resistor DAC. (8)
- (ii) Describe the switching functions in DAC. (8)

Or

- (b) Explain in detail the current steering DAC architecture with a neat diagram. (16)
14. (a) (i) Describe the Successive approximation ADC architecture and its features in detail. (8)
- (ii) Give an account on "Pipelined ADC architecture". (8)

Or

- (b) Explain the Time interleaved ADC architecture in detail with a neat diagram. (16)
15. (a) Discuss the concept of comparator offset cancellation in detail, with a neat diagram. (16)

Or

- (b) Write technical notes on :
- (i) Calibration techniques (8)
- (ii) Digital correction. (8)