



TED (15)–3133

Reg. No.....

(REVISION — 2015)

Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2017

**DIGITAL COMPUTER PRINCIPLES**

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. State the number of symbols used in an Octal Number System.
2. Full form of ASCII.
3. Describe combinational Circuit.
4. Name the flipflop used to construct a Ripple counter.
5. Name an error detecting and correcting code.

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Draw the symbol and truth table of NOR & EX-OR gate.
2. Map the expression  $f = A'B'C + A'BC' + AB'C'$ .
3. Draw a logic diagram of a four input multiplexer.
4. Describe SR Latch using NAND Gate.
5. Construct a Johnson counter using D Flipflop.
6. State the DAC Parameters - Offset voltage and Monotonicity.
7. Illustrate the logic diagram of a memory cell.

(5×6 = 30)





PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

- III (a) Convert the following :
- (i)  $(2A0F.12)_{16}$  to Octal
  - (ii)  $(267.11)_8$  to Hexadecimal
  - (iii) 167.12 to Binary
- (b) Expand  $A + B$  to minterms and maxterms.

OR

- IV (a) Describe and Prove Demorgan's Theorem.
- (b) Describe 3 basic gates with Truth Table.

UNIT — II

- V (a) Design a full Subtractor.
- (b) Reduce the expression  $f = \sum m(0, 1, 2, 3, 5, 7, 8, 9, 10, 12, 13)$  using K-map.

OR

- VI Design a Gray to Binary Decoder.

UNIT — III

- VII (a) Demonstrate a JK Flipflop with truth table.
- (b) Construct a D Latch using a gated SR Latch.

OR

- VIII (a) Design a mod 6 counter using T FF.
- (b) Compare Synchronous and asynchronous counter.

UNIT — IV

- IX Explain a Counter type ADC.

OR

- X (a) Decode the message "1001001" coded in 7 bit Hamming code; assuming that at most a single error occurred in the code.

- (b) Develop a programming table for PAL for Boolean functions.

$$w = ABC' + A'B'CD'$$

$$x = A + BCD$$

$$y = A'B + CD + B'D'$$

$$z = ABC' + A'B'CD' + AC'D' + A'B'C'D$$

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