

TED (15) – 3133

(REVISION – 2015)

Reg. No.

Signature

THIRD SEMESTER DIPLOMA EXAMINATION IN
ENGINEERING/TECHNOLOGY — OCTOBER, 2016

DIGITAL COMPUTER PRINCIPLES

(Common for CT and CM)

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. State the base of a number system.
2. One's compliment of 1011 is
3. Reduce the expression $f(A, B, C) = \sum m(0, 1, 2, 3, 4, 5, 6, 7)$.
4. Name the flipflop used for data storage.
5. Name an error detecting code.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Convert 1011 to gray code and gray code 1100 to binary.
2. Map the expression $f = A'B'C + AB'C + A'BC' + ABC' + ABC$.
3. Demonstrate a one bit comparator.
4. Compare sequential and combinational circuit.
5. Draw a 4 bit ring counter using D Flipflop.
6. State the DAC Parameters - Accuracy and Settling time.
7. Draw an internal logic diagram of 32×8 ROM.

(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) $(237.25)_{16}$ to Octal

(ii) $(11010011.1111)_2$ to Hexadecimal

(iii) 232.17 to Binary

9

(b) Expand $A' + B'$ to min terms and max terms.

6

OR

IV Describe any 7 laws of Boolean Algebra.

15

UNIT - II

V (a) Design a full adder.

9

(b) Reduce the expression $f = \sum m(0, 2, 3, 4, 5, 6)$ using K-map.

6

OR

VI Demonstrate a 4 bit adder-subtractor with suitable neat diagram.

15

UNIT - III

VII (a) Demonstrate a JK Flipflop with Truth Table.

9

(b) Construct a T Flipflop using a JK Flipflop with Truth Table

6

OR

VIII Demonstrate a 4 bit parallel in serial out shift register.

15

UNIT - IV

IX Explain a weighted resistor type DAC.

15

OR

X Draw a logic diagram to implement the Boolean functions.

$$F1 = AB' + AC + A'BC'$$

$F2 = (AC + BC)'$ in PLA with a PLA programming table.

15