TED (15) – 3133

Reg. No. ....

(REVISION — 2015)

Signature ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

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. Define base of a number system.

2. What is parity bit ?

3. Define Encoder.

4. Define latch.

5. What is PAL ?   (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Write short notes on BCD codes.

2. State and prove De-Morgan's theorem.

3. Realize EX-OR, OR gates using NAND gate.

4. Expand $A' + B'$ to minterms and maxterms.

5. Explain the working of a D-flipflop.

6. Differentiate synchronous and asynchronous sequential circuits.

7. Explain how memory decoding is performed.   (5×6 = 30)

[50]

[P.T.O.

Marks

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) $(11011.101)_2$ to Decimal

  (ii) $(BFA6)_{16}$ to binary

  (iii) $(756.603)_8$ to hexa decimal — 9

  (b) Reduce and draw the logic diagram for the Boolean expression
  $F = A(B+C)+B'(B+D)$ — 6

Or

IV (a) Explain basic gates with truth table and logic diagram. — 9

  (b) Explain the procedure of obtaining an equivalent gray code for a binary code with example. — 6

Unit — II

V (a) Simplify the Boolean function $F (w, x, y, z) = \sum m(1, 3, 7, 11, 15)$ which has the don't-care conditions $d (w, x, y, z) = (0, 2, 5)$. — 9

  (b) Design a half adder with truth table and logic diagram. — 6

Or

VI (a) Design a decimal Adder with truth table and logic diagram. — 9

  (b) Write short notes on SOP and POS forms. — 6

Unit — III

VII Explain about different types of shift registers. — 15

Or

VIII (a) Explain the working of a JK-Flipflop with truth table and diagram. — 8

  (b) Design a 3 bit up counter. — 7

Unit — IV

IX (a) Explain the specifications of a DAC. — 8

  (b) Explain construction of memory cell with logic diagram. — 7

Or

X (a) Explain the working of programmable logic array with an example. — 9

  (b) Explain a R-2R ladder DAC. — 6

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