

Roll No.

67013

MCA Ist Semester (with old notes)

Examination – December, 2016

DIGITAL DESIGN

Paper : MCA-103

Time : Three Hours]

[Maximum Marks : 80

Before answering the question, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting at least one question from each Unit. All questions carry equal marks.

UNIT – I

1. (a) What is Gray code ? How is it useful and used ?
Discuss with examples. 4
- (b) Add and multiply the following numbers in the given base without converting to decimal : 4
 - (i) $(1240)_4$ and $(33)_4$
 - (ii) $(357)_8$ and $(815)_8$
- (c) Devise an algorithm in flowchart form to divide two floating point numbers. 8

2. (a) Explain various ways to represent negative numbers in computer with suitable examples. 8
(b) Differentiate between BCD code and Excess-3 code with their relative merits with examples. 8

UNIT – II

3. (a) What are logic gates ? How these are useful and used ? Explain with suitable examples. 8
(b) Discuss Theorems of Boolean algebra with its uses and advantages through examples. 8
4. (a) Using Karnaugh map simplify the following Boolean function : 8
 $F(A,B,C,D) = \Sigma(1,3,5,8,9,11,15) + \Sigma(2,13)$
(b) What is Quine-McCluskey tabular method ? How is it used and useful ? Explain with examples. 8

UNIT – III

5. (a) What is T-flip flop ? How is it used and useful ? Explain it with an example. 8
(b) Write the procedure for designing combinatorial circuits. Using this procedure design a code-converter for BCD code to seven segment display. 8

6. Explain the following with examples : 8 Each
(a) BCD adder and Magnitude Comparator.
(b) J K Flip Flop and its working.

UNIT – IV

7. (a) Design a ripple counter to count from 0 to 9 in 8-4-2-1 code. Assume that the flip flop have set and reset terminals. 8
(b) Describe RAM architecture with neat diagram. 8
8. Explain the following with examples : 8 Each
(a) Shift Register and its merits and uses.
(b) Binary Ripple Counters and their advantages.

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