

Roll No. ....

**67043**

**M.C.A. Ist Sem. w.e.f. Dec. 2011 (New)**

**Examination – December, 2012**

**DIGITAL DESIGN**

**Paper : MCA-103**

*Time : Three hours ]*

*[ Maximum Marks : 80*

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

*Note : Question No. 1 is compulsory. Attempt four more questions, selecting one question from each Unit.*

1. Answer the following questions briefly :  $8 \times 2 = 16$

- (a) Define static RAM.
- (b) Write uses of 2's complement.
- (c) Describe two advantages and two disadvantages of alphanumeric codes.
- (d) Discuss uses of Hamming code.
- (e) Explain parity bits and their uses.
- (f) What is BCD code ?

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- (g) Write advantages of K-map.
- (h) Convert decimal number 56.25 to its binary equivalent.

### UNIT - I

- 2. (a) What is binary division? How is it useful and used? Discuss with examples. 8
- (b) Discuss uses and advantages of floating point numbers with examples. 8
- 3. Explain the following briefly with suitable examples : 8 each
  - (i) Convert binary number 11100111001.0001 to its octal and hexadecimal equivalents.
  - (ii) Subtraction using 2's complement method.

### UNIT - II

- 4. (a) What is fan out of logic gates? How is it useful and used? Explain with examples. 8
- (b) Discuss important features of Boolean algebra with suitable examples. 8
- 5. Describe the following with examples : 16
  - (a) Quine-McCluskey tabular method.
  - (b) ECL logic family and its applications.

### UNIT – III

6. (a) What is T -flip flop? How is it used and useful?  
Explain it with suitable example. 8
- (b) Discuss uses of encoders and decoders with  
suitable examples. 8
7. Explain the following with examples : 8 each
- (i) Differentiate between synchronous asynchronous  
inputs.
- (ii) Programmable logic array and its uses.

### UNIT – IV

8. (a) What is ripple counter? How it is used and  
different from synchronous counter? Discuss with  
examples. 10
- (b) Explain RAM architecture with suitable  
examples. 6
9. Explain the following with examples: 16
- (i) BCD counters
- (ii) Shift register and its uses