



I Semester M.C.A. Degree Examination, January 2016  
(CBCS)  
COMPUTER SCIENCE  
MCA-103T : Digital Electronics and Microprocessor

Time : 3 Hours

Max. Marks : 70

*Instruction : Answer any five questions from Part – A and four questions from Part – B.*

## PART – A

1. a) Simplify the Boolean function  $F(A, B, C)$  in SOP using don't care condition  $F = B + AC$ . 4
- b) Perform 2's complement for 101010. 2
2. Define : 6
  - i) BCD Numbers
  - ii) Demorgan's theorem.
  - iii) NAND Gate.
3. Construct full-adder from half-adder along with truth tables. 6
4. Explain various basic logic gates with truth table. 6
5. Explain with the functional block diagram, the architecture of 8085 microprocessor. 6
6. Explain the use of stack in the microprocessor based system with examples. 6
7. Write short notes on
  - a) I/O port addressing. 3
  - b) Bus buffering. 3
8. Explain :
  - i) CBW
  - ii) CMPS
  - iii) RET
  - iv) JCXZ
  - v) Set/reset flags
  - vi) Test. 6

P.T.O.



## PART – B

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|-----|--------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 9.  | i) Convert $(98.625)_{10}$ to its equivalent Hexa decimal number.                                                                                | 3 |
|     | ii) Convert $(CD.E8)_{16}$ to its equivalent binary number.                                                                                      | 3 |
|     | iii) Explain 3-variable k-map.                                                                                                                   | 4 |
| 10. | i) Draw the circuit of D-flip-flop and discuss its working.                                                                                      | 6 |
|     | ii) Describe the importance of combinational logic circuits.                                                                                     | 4 |
| 11. | i) Describe the programming model of 8086 along with registers.                                                                                  | 8 |
|     | ii) Explain MIN/MAX mode of operations in microprocessor.                                                                                        | 2 |
| 12. | Explain the following instructions in 8086 :                                                                                                     |   |
|     | i) Data transfer instructions                                                                                                                    | 5 |
|     | ii) PUSH, POP and exchange                                                                                                                       | 5 |
| 13. | i) The 8 databytes are stored from memory location E000H to E007H. Write 8086 ALP to transfer the block of data to new location B001H to B008 H. | 6 |
|     | ii) Compare microprocessors and microcomputers.                                                                                                  | 4 |
| 14. | i) Define interrupt. Explain the priorities of interrupts.                                                                                       | 5 |
|     | ii) Compare and contrast between subroutine and macros.                                                                                          | 5 |
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