

M 26752

Reg. No. :

Name :

I Semester M.C.A. (Reg./Sup./Imp.) Degree Examination, February 2015
(2013 and Earlier Admn.)

MCAC1.4 : DIGITAL SYSTEMS AND MICROPROCESSORS

Time: 3 Hours

Max. Marks : 80

Instructions : Answer any five questions.

Each question carry equal marks.

1. a) Using 2's complement solve the following $(-91)_{10} + (-37)_{10} + (-46)_{10}$. 8
- b) Convert the decimal number 250.5 to base 3, base 5, base 8 and base 16. 8
2. a) Express the boolean function $F = A + B^1C$ in a sum of Minterms. 8
- b) Simplify the following Boolean function in
 - i) Sum of products
 - ii) Product of sums $F(A, B, C, D) = \sum(0, 1, 2, 5, 8, 9, 10)$ 8
3. a) Implement a EXOR functions using NAND and NOR gates. 8
- b) Draw the state diagram of a module 4 up/down counter, design the specific circuit using JK-flip/flop. 8
4. a) Compare and contrast synchronous and asynchronous counter. 8
- b) Design a combinational circuit that converts BCD to excess - 3 code. 8
5. a) Implement the following functions with a multiplexer.
 $F(A, B, C, D) = \sum(0, 1, 3, 4, 8, 9, 14)$. 8
- b) Distinguish between the features of multiplexes and demultiplexes. 8
6. a) Explain with neat diagram architecture of 8085. 8
- b) Discuss the various addressing modes with suitable examples. 8

P.T.O.



7. a) What is an interrupt ? Describe the importance of software and hardware interrupts. 8
- b) Explain the concepts of segmentation scheme implemented in 8086. 8
8. Write short notes on : (4x4=16)
- a) Additional features of 8086
- b) Subroutines
- c) Universal shift registers
- d) Logic families.

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