

S.D.E.
M.C.A. Sem - I (Old Course) : WINTER - 2018
SUBJECT: COMPUTER ORGANISATION AND ARCHITECTURE

Day: Thursday
Date: 29/11/2018

W-2018-4792

Time: 10.00 AM TO 1.00 PM
Max. Marks: 80

N.B.:

- 1) Attempt any **FIVE** questions from Section –I and any **TWO** questions from Section–II.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.

SECTION-I

- Q.1** What is decoder? Explain 3 to 8 line decoder with help of diagram. (10)
- Q.2** Illustrate the functioning of 4 bit synchronous binary counter with neat diagram. (10)
- Q.3** Explain control unit of basic computer with help of diagram in detail. (10)
- Q.4** Describe various Instruction formats with suitable examples. (10)
- Q.5** What is associative memory? Explain functioning of associative memory with suitable diagram. (10)
- Q.6** What do you mean by priority Interrupt? Discuss daisy chaining priority interrupt with diagram. (10)
- Q.7** Write short notes on any **TWO** of the following: (10)
- a) Logic gates
 - b) Register transfer language
 - c) Shift micro-operations

SECTION-II

- Q.8** a) Solve the following Expression using stock: $[(3+4)+7] * [2*(3+2)+2]$. (08)
- b) Solve the following: (07)
- i) Find 2's complement of: 10101010 ii) 11001100 - 00110011
- Q.9** a) Draw the circuit diagram and truth table for the following expression: (08)
- $A' B + ABC' + ABC$
- b) Simplify the following Boolean function using K map: (07)
- $F(A, B, C, D) = \sum(1, 3, 5, 9, 13, 15)$
- Q.10** A sequential circuit has two D flip flops A and B, one input x and one output z. The flip flop input equations and circuit outputs are as follows: (15)
- $D_A = Ax + Bx$
- $D_B = A'x$
- $z = Ax + Bx'$
- i) Draw logic diagram of the circuit.
 - ii) Tabulate the state table.
 - iii) Draw the state diagram.