BB-684

M.C.A. EXAMINATION, May 2018

(Second Semester)

(B. Scheme) (Main & Re-appear)

(MCA)

MCA406

COMPUTER ORGANIZATION AND
ARCHITECTURE

Time : 3 *Hours*]   [*Maximum Marks :* 75

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

Note : Attempt *Five* questions in all, selecting at
least *one* question from each Unit.

Unit I

1. (a) Simplify using Boolean algebra : **15**

$$AB'C (BD + CDE) + AC' = A(C' + B'DE)$$

(b) Convert $(24)_8$ from octal to binary, decimal and BCD.

(c) Explain De-Morgan's laws by using logic gates. **15**

2. Design a combinational circuit with three inputs X, Y, Z and three output A, B, C. When the binary input is 0, 1, 2, 3 the binary output is one greater than the input ? When the binary input is 4, 5, 6 or 7 the binary output is one less than input ? **15**

Unit II

3. What do you mean by flip-flop ? Differentiate S-R with J-K flip-flop. **15**

4. Write short notes on the following :

(a) Ring counter

(b) Johnson Counter. **15**

Unit III

5. (a) What are advantages and disadvantages of fixed and variable instruction format ? **3**

(b) What advantages are offered by complex instruction set computers ? **4**

(c) Describe instruction cycle. **8**

6. Compare the following addressing modes : **15**

(a) Implied and immediate

(b) Indirect and register indirect

(c) Indexed and base. **15**

Unit IV

7. Write short notes on the following :

(a) Asynchronous data transfer

(b) Micro instructions

(c) Control memory. **15**

8. Explain hardwired control unit and its types. What are the features of hardwired control unit ? **15**