

Roll No.

Exam Code : M-21

Subject Code—52852

B.C.A. EXAMINATION

(Main/Reappear Batch 2017 Onwards)

(First Semester)

LOGICAL ORGANIZATION OF COMPUTER-I

BCA-114

Time : 3 Hours

Maximum Marks : 70

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory, selecting *one* question from each Unit.

1. Explain the following : **7×2=14**

- (a) Error detecting and Error correcting codes
- (b) Venn diagram
- (c) Truth table
- (d) Explain canonical SOP and POS expressions.

- (e) Illustrate with example fixed point representation and floating point representation.
- (f) What is the difference between Combinational Logic and Sequential Logic ?
- (g) Draw diagram of 4-bit adder.

Unit I

2. (a) Minimize the four variable logic functions :

$$F(A, B, C, D) = A B \bar{C} D + \bar{A} B C D + \bar{A} \bar{B} \bar{C} + \bar{A} \bar{B} \bar{D} + A \bar{C} + A \bar{B} C + \bar{B}. \quad 10$$

- (b) What do you mean by don't care conditions ? Explain with a suitable example. 4
3. (a) What do you mean by principle of parity checking ? Explain in detail. 7
- (b) What are De-Morgan's Law ? Explain in detail. 7

Unit II

4. (a) Explain the different basic gates and universal gates with their truth tables. 7
- (b) What do you mean by canonical and standard form of Boolean functions ? Explain. 7
5. (a) Explain the following : 8
- (i) Full Subtractor
 - (ii) De-multiplexer.
- (b) What do you mean by BCD to seven segment converter ? Explain. 6

Unit III

6. Discuss the operation of JK flip-flop logic diagram, truth table and symbols. 14
7. Explain the working of Master Slave Flip-flop with neat diagram. 14

Unit IV

8. Make Mod-5 synchronous counter using JK flip-flop. 14
9. Explain various modes of shift operations. 14