Roll No. ..... Total Pages : 03

BCA/M-19 **19004**

LOGICAL ORGANIZATION OF COMPUTERS

BCA-104

Time : Three Hours] [Maximum Marks : 80

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

Compulsory Question

1. (a) Define Unicode.

(b) Draw Venn Diagram for A or $\bar{B}$.

(c) What do you mean by Basic Gates ?

(d) Define a decoder.

(e) What do you mean by a Sequential Circuit ?

(f) What is a Shift Register ?

(g) Define Cache Memory.

(h) Fill in the blanks :

1 TB = ...KB. 2×8

Unit I

2. Evaluate the following :
   (a) $(53.25)_{10} = (?)_2$
   (b) $(11011.01)_2 = (?)_{10}$
   (c) $(63.27)_8 = (?)_{10}$
   (d) $(195.75)_{10} = (?)_{16}$

3. (a) What do you mean by Boolean Algebra ? **4**
   (b) Write down the postulates of Boolean Algebra. **12**

Unit II

4. (a) Introduce XOR and XNOR gates. **3×2**
   (b) Perform NAND Gate implementation for :
   (i) $A.\overline{B} + A.B.C + \overline{A}.B.\overline{C}$
   (ii) $(\overline{A}+B).(A+B+\overline{C}).(\overline{A}+\overline{B}+C)$ **5×2**

5. (a) Define Half Adder and Full Adder. **3×2**
   (b) Design a Combinational Circuit for a full subtractor. **10**

Unit III

6. Explain the working of SR Flip-Flop in detail. **16**

7. Design a Mod-9 Counter. **16**

Unit IV

8. (a) What do you mean by the term Memory ? **4**
   (b) Describe the different memory parameters. **12**

9. (a) What is an Instruction format ? **6**
   (b) Explain DMA transfer in detail. **10**