7-12-2019

Roll No. .....

1193

Printed Pages : 3

BCA/D–19

LOGICAL ORGANISATION OF COMPUTER–I

Paper–BCA-114

Time allowed : 3 hours] *[Maximum marks : 80*

Note** : Attempt **five** questions, selecting **one** question from each unit. **Question No. 1 is compulsory.

1. (a) Differentiate ordinary algebra and Boolean Algebra 4

(b) Solve using T.T.

(i) $\overline{a \cdot b \cdot c} = \bar{a} + \bar{b} + \bar{c}$

(ii) $(a + b) + c = a + (b + c)$ 4

(c) Define cyclic code and 8421 code 4

(d) What is condition of overflow and underflow in floating point notation 4

Total=16

Unit–I

2. (a) Perform as follows :

(i) $(X)_2 = 3AB7$ 2

(ii) $(11.625)_{10}$ → ( )$_2$
→ ( )$_8$ and back
→ ( )$_{16}$ 3

(iii) $(110\ 111\ 101)_2$ → ( )$_8$
→ ( )$_{16}$ 2

(iv) Register stores High, Low, High, Low, find number in Decimal, octal and Hexa Decimal. 3

(b) Write a note on 7-bit representation for ever detection and correction code 4

(c) Abbreviate ASCII, EBCDIC 2

Total = 16

3. (a) Use 2's compliment to solve

− 9	−32	− 7	+7
−10	+16	−19	+6

8

(b) Explain floating point representation. 8

Unit–II

4. (a) Define Boolean Algebra and write Postulates of Boolean Algebra. 10

(b) Solve using Boolean Algebra

(i) $(X+Y)(XZ+Z)\left(\overline{\overline{Y}+XZ}\right)=\overline{X}YZ$

(ii) $abc+\bar{a}bc+a\bar{b}c+ab\bar{c}$ 6

5. (a) Draw and label 4 variable K-Map and solve for four corners 8

(b) Solve using K-Map 8

$Z=\Sigma\ 1, 3, 5, 7$

$Z=\Sigma\ 0, 1, 10, 11, 15\ \&\ \underset{\phi}{\Sigma}\ 4, 5, 8, 14$

Unit–III

6. (a) Prove that NAND and NOR are universal gates. 4

   (b) Design 3 variable AND, NOR 4

   (c) Draw X NOR and XOR gates 4

   (d) Design $X = cd\left(\bar{a}b + a\bar{b}\right) + PQ\left(\overline{P}\,\overline{Q} + \overline{PQ}\right)$ 4

7. Explain design procedure for combinational circuit with example. 16

Unit–IV

8. (a) Design 4:1 Multiplexer

   (b) Make 8421 to 2421 code converter. 16

9. (a) Explain full-Adder using K-Map

   (b) Design 10 to 4 Line Encoder. 16