

Roll No. ....

**97664**

**BCA 1st Semester  
Examination – December, 2022**

**LOGICAL ORGANIZATION OF COMPUTER - I**

**Paper : BCA-104**

***Time : Three Hours ]***

***[ Maximum Marks : 80***

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

**Note :** Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. (a) What is Unicode ?
- (b) What is Number system ?
- (c) What is Multiplexer ?

- (d) Differentiate Encoder and Decoder.
- (e) How does a NAND gate works ?
- (f) What is Digital signal ?
- (g) What is Boolean Function ?
- (h) What is Venn diagram ?

**UNIT – I**

2. (a) Construct an even parity seven bit hamming code to transmit the data (i) 0100 (ii) 1110.
- (b) What is BCD code ? What are the rule for BCD addition ? Explain with suitable example.
3. (a) Perform the following conversions  $(37.125)_{10} = ( )_2 = ( )_8 = ( )_{16}$ .
- (b) Add 10110111 and 01110101
- (c) Subtract 10001 from 11001.

## UNIT – II

4. Simplify the following Boolean function  $F(A, B, C, D) = \Sigma(0, 1, 2, 5, 8, 9, 10)$  in SOP. Draw the logic circuit using gates.

5. (a) State and prove De Morgan law.

(b) Simplify the following Boolean expression :

(i)  $ABC'D' + ABC'D + ABCD' + ABCD$

(ii)  $AB(A'BC' + AB'C' + A'BC)$

## UNIT – III

6. (a) How to realize OR, NOT, AND using universal gates? <https://www.mdustudy.com>

(b) What is the design procedure for combinational logic circuit?

7. (a) What is an exclusive OR and exclusive NOR gate? Draw its symbol and prepare truth table.

(b) Explain AND-OR-INVERT and OR-AND-INVERT gate.

## UNIT – IV

8. (a) What is full adder? How a full adder is built using half adder?

(b) What is BCD to seven segment Decoder? Explain.

9. (a) What are Encoders? Draw and explain a Octal to binary encoder.

(b) What is full subtractors? Prepare truth table circuit for full subtractor.