

H

Roll No.

TBC-204/TBI-202

B. C. A./B. SC. (IT)
(SECOND SEMESTER)
MID SEMESTER

EXAMINATION, 2021-22
DIGITAL ELECTRONICS

Time : 1½ Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) Convert the following : (CO1)

(i) $(5C7)_{16} = (?)_{10}$

(ii) $(2598)_{10} = (?)_{16}$

(iii) $(10110)_2 = (?)_{10}$

OR

(b) Perform the following subtraction using 1's and 2's complement method : (CO1)

(i) $(52)_{10} - (65)_{10}$

(ii) $(101011)_2 - (11010)_2$

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2. (a) How is the error detection and correction carried out using parity method in digital data transmission ? (CO1)

OR

- (b) Realize the Boolean expression : (CO1)

$$Z = ABC + AD + CD'$$

using NAND gates only.

(CO1)

3. (a) Realize the following logic operations using only NAND gates : AND, OR, NOT. (CO2)

OR

- (b) Reduce the following Boolean expression using Boolean laws : (CO2)

$$Y = AB + A'B + AB' + (AB)'$$

4. (a) State and prove DeMorgan's Theorems.

(CO2)

OR

- (b) Using K-map, minimize the expression :

(CO2)

$$F(A, B, C, D) = \sum m(1, 2, 3, 8, 14, 15)$$

$$+ d(0, 4, 6, 10)$$

(3)

5. (a) Draw the circuit of a full adder and explain. (CO3)

OR

- (b) Design a half adder circuit and realize using NAND gates only. (CO3)

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1,350