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

P. T. O.

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)

$F(A, B, C, D) = \Sigma m (1, 2, 3, 8, 14, 15) + d (0, 4, 6, 10)$

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)