

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2021-COURSE)
B. Tech. Sem - I Computer Science & Engineering : WINTER- 2022
SUBJECT : DIGITAL ELECTRONICS

Day : Monday

Time : 10:00 AM-01:00 PM

Date : 16-01-2023

W-24021-2022

Max. Marks : 60

N.B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume **Suitable** data, if necessary.
- 4) Draw neat diagram **WHEREVER** necessary.

Q.1 Perform the following conversions (10)

- a. $(325.25)_8 = (\quad)_{10}$
- b. $(101010.101)_2 = (\quad)_{16}$
- c. $(56.34)_{10} = (\quad)_2$
- d. $(E72)_{16} = (\quad)_8$
- e. $(132.12)_{10} = (\quad)_2$

OR

Q.1 Illustrate NAND and NOR are universal gates with the help of neat logic diagrams. (10)

Q.2 Simplify the following function using k-map and implement using logic gates. (10)

$$f(A, B, C, D) = \sum m(0, 2, 3, 6, 7, 11, 13, 14, 15)$$

OR

Q.2 Simplify the following function using Quine Mc cluskey method and implement using logic gates. (10)

$$f(A, B, C, D) = \sum m(0, 1, 3, 7, 8, 9, 11, 15)$$

Q.3 Design 4 bit BCD to Excess-3 code converter. (10)

OR

Q.3 Describe working of Multiplexer Implement the following function using 16:1 Multiplexer. (10)

$$f(A, B, C, D, E) = \sum m(0, 2, 4, 5, 7, 10, 14, 16, 17, 20, 26, 30)$$

Q.4 Describe different types of flip flops with truth tables and neat diagrams. (10)

OR

Q.4 Design and implement mod-5 counter. Draw timing diagram. (10)

Q.5 Distinguish between Moore and Mealy model with suitable example. (10)

OR

Q.5 Describe Multiplexer Controller method for designing logic circuits using ASM charts. (10)

Q.6 Describe different types of semiconductor memories and state their applications and characteristics. (10)

OR

Q.6 A combinational logic is defined by functions (10)

$$F_1(A, B, C) = \sum m(4, 5, 7) \text{ and } F_2(A, B, C) = \sum m(1, 5, 7)$$

Implement this circuit using PLA with 3 inputs, 3 product terms and 2 outputs.

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