BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - I Computer Science & Engineering : WINTER: 2025
SUBJECT: DIGITAL ELECTRONICS

Day : Friday
Date : 12/12/2025

W-24021-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

1) All questions are **COMPULSORY.**
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Assume suitable data **WHEREVER** necessary.
4) Draw neat labeled diagrams **WHEREVER** necessary.

Q.1 **Convert the following** **(10)**

i) $(101011.101)_2 = (?)_8$
ii) $(375.25)_{10} = (?)_2$
iii) $(152.25)_8 = (?)_{10}$
iv) $(6BA)_{16} = (?)_2$

OR

Q.1 Define universal gates and its types in detail. **(10)**

Q.2 Simplify the following expressions using k-map and implement using logic gates. **(10)**
$f(A, B, C, D) = \sum m (0, 2, 5, 6, 7, 8, 10, 13, 15)$

OR

Q.2 Simplify the following function using Quine Mc Cluskey method and implement using logic gates $f(A, B, C, D) = \sum m (0,1,3,7,8,9,11,15)$ **(10)**

Q.3 Describe the working of 3 X 8 decoder with truth table and circuit diagram. **(10)**

OR

Q.3 Design 4 bit Binary to Gray code converter. **(10)**

Q.4 Explain in detail J-K flip-flop with neat diagram, excitation table, characteristic table and equation. **(10)**

OR

Q.4 Design 4-bit Asynchronous down counter. **(10)**

Q.5 Describe notations of ASM chart. Draw ASM chart and state diagram for 3 bit. **(10)**

OR

Q.5 What is a state machine? Explain Moore and Mealy state machine with suitable examples. **(10)**

Q.6 Classify semiconductor memories in detail. **(10)**

OR

Q.6 Explain in detail with suitable example architecture of PLA. **(10)**

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