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

Day : Thursday
Date : 15/05/2025

S-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) $(10.25)_{10} = (?)_2$
ii) $(101101.10101)_2 = (?)_{16}$
iii) $(1505)_8 = (?)_{10}$
iv) $(A3E)_{16} = (?)_{10}$

OR

Q.1 Explain BCD code, Gray code and Excess-3 code with suitable examples. **(10)**

Q.2 Simplify the following expressions using k-map and implement using logic gates. **(10)**
$f(A, B, C, D) = \sum m (1,5,6,7,11,12,13,15)$

OR

Q.2 Simplify the following function using Quine Mc Cluskey method and implement using logic gates $f(A, B, C, D) = \sum m (0,2,3,6,7,8,10,13)$ **(10)**

Q.3 Design half adder, full adder, half subtractor and full subtractor with truth tables. **(10)**

OR

Q.3 Describe working of 8:1 Multiplexer with suitable circuit diagram and truth table. **(10)**

Q.4 Describe various types of flip-flops with truth table and neat diagram. **(10)**

OR

Q.4 Illustrate ripple counter in detail. **(10)**

Q.5 Distinguish between Moore and Mealy state machine with suitable diagram. **(10)**

OR

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

Q.6 A combinational logic function is defined by **(10)**
$f_1(A, B, C,) = \sum m (1,2,5)$
$f_2(A, B, C,) = \sum m (3,2,4,5)$
Implement this circuit using PLA

OR

Q.6 What are semiconductor memories? Explain it with its characteristics and give classification of it. **(10)**

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