BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-I Computer Science & Engineering : SUMMER : 2025
SUBJECT: DIGITAL ELECTRONICS

Day : Friday
Date : 16/05/2025

S-27609-2025

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) Draw neat labelled diagrams **WHEREVER** necessary.
4) Use of non-programmable **CALCULATOR** is allowed.

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

i) $(1505)_8 = (?)_{10}$ ii) $(A3E)_{16} = (?)_{10}$
iii) $(101011.101)_2 = (?)_8$ iv) $(375.25)_{10} = (?)_2$

OR

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

Q.2 Simplify the following expression 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 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 Describe the working of 3X8 decoder with truth table and circuit diagram. **(10)**

OR

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

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

OR

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

Q.5 Describe notations of ASM chart and design a sequence detector which detects the sequence 1010. **(10)**

OR

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

Q.6 A combinational logic function is defined by **(10)**
$f1(A,B,C) = \sum m(1,2,5)$
$f2(A,B,C) = \sum m(3,2,4,5)$
Implement this circuit using PLA.

OR

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

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