Code No.: DS305ES | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Regular) - January- 2022
DIGITAL LOGIC DESIGN
(CSD)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1. a) Convert Gray to Binary for following [2M]
   i. 101010,
   ii. 1100110.
   b) What is Demorgan's Theorem? [2M]
   c) Identify the I, PI, EPI for the given logic f(A, B, C)=∑(1,3,6,7). [2M]
   d) Draw a Logic Diagram of EXOR Gate using NAND Gates. [2M]
   e) Compare between Combination Circuit and Sequential Circuit. [2M]
   f) How many 4X1 MUX required to implement 32X1 MUX. [2M]
   g) Draw the Truth Table of D Flip Flop. [2M]
   h) How many Used and Unused States for Decade Counter? [2M]
   i) What is PAL? [2M]
   j) What is Memory Decoding? [2M]

PART-B **(50 Marks)**

2. Convert following [10M]
   i. $(10101010)_2$ to Octal,
   ii. 10100101 to EX-3 Code,
   iii. $(23.75)_{10}$ to Binary,
   iv. $(435)_8$ to $(\ )_{16}$,
   v. $(100001)_{Gray}$ to Binary.

OR

3. What is Canonical Standard Form of SOP for f(x,y,z)=xy+x'z and convert into POS Form. [10M]

4. Minimize logic function for f (A, B, C, D) = ∑ (1, 3, 4, 6, 9, 11, 12, 14) using K-Map. [10M]

OR

5. Minimize logic function for f (A, B, C, D) = ∑ (3, 4, 5, 7, 9, 11, 13, 14, 15) using K-Map. [10M]

6. Design a Full Adder using two Half Adders. [10M]

OR

7. Implement Full Adder by using 3X8 Decoder. [10M]

8. What are the disadvantages of S-R Flip Flop, Draw a S-R Flip Flop Logic Diagram and Characteristic Equation. [10M]

OR

9. Design a Mod 5 Synchronous Counter. [10M]

10. What is a Read Only Memory and discuss with detail. [10M]

OR

11. What are advantages of the Programmable Logic Array and discuss with an example. [10M]

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