

Code No.: EC302PC

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H.T.No.

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CMR ENGINEERING COLLEGE: : HYDERABAD

UGC AUTONOMOUS

II-B.TECH-I-Semester End Examinations (Supply) - August- 2023

DIGITAL SYSTEM DESIGN

(ECE)

[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 the Gray coded number 1011010111001 in to Binary. [2M]
- b) How can you get the Boolean equations from the truth table? [2M]
- c) Describe the importance of don't care conditions. [2M]
- d) What is the draw back in binary parallel adder? How can it be rectified? [2M]
- e) What is meant by Race Around condition in flip flop? [2M]
- f) Mention some important applications of shift registers. [2M]
- g) What is a PLA? Describe its uses. [2M]
- h) Describe the basic functions of ROM. [2M]
- i) Draw the symbol of NMOS and PMOS transistor. [2M]
- j) Define Propagation delay. [2M]

**PART-B**

**(50 Marks)**

2. How hamming codes locate the error? Explain with an example. [10M]
- OR**
3. What is Boolean algebra? How it is different from ordinary algebra and binary number system. [10M]
4. Minimize the following function using K-Map. [10M]  
 $F(w,x,y,z) = \Sigma m(0,1,2,3,4,6,8,9,10)$
- OR**
5. Design 4-bit BCD to XS-3 code converter. [10M]
6. Explain the operation of JK Master slave flip flop. [10M]
- OR**
7. What is a shift register? Explain different types of shift registers with functional diagrams. [10M]
8. Derive the state table and state diagram for a serial adder. [10M]
- OR**
9. Compare three combinational circuits PLA, PAL and ROM. [10M]
10. Compare different CMOS Logic families. [10M]
- OR**
11. Explain the following specifications [10M]  
i. Fan out ii. Noise margin.

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