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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year II Semester Supplementary Examinations March-2021**

**DIGITAL ELECTRONICS**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

**PART-A**

(Answer all the Questions 5 x 2 = 10 Marks)

- |   |   |                                                              |    |
|---|---|--------------------------------------------------------------|----|
| 1 | a | What is a canonical form give example?                       | 2M |
|   | b | How you can differentiate encoder and de-coder?              | 2M |
|   | c | Draw and mention its input and output in JK master slave FF. | 2M |
|   | d | Define propagation delay.                                    | 2M |
|   | e | List out types of memories.                                  | 2M |

**PART-B**

(Answer all Five Units 5 x 10 = 50 Marks)

**UNIT-I**

- |   |   |                                                                                            |    |
|---|---|--------------------------------------------------------------------------------------------|----|
| 2 | a | Perform the following.<br>Subtraction by using 1's complement for the given 10101 - 11011. | 5M |
|   | b | Subtraction by using 2's complement for the given 111001-1010.                             | 5M |

**OR**

- |   |   |                                                                                                                       |    |
|---|---|-----------------------------------------------------------------------------------------------------------------------|----|
| 3 | a | Explain Different Types of binary codes and give the examples?                                                        | 5M |
|   | b | Simplify the following Boolean functions to minimum number of literals<br>(i) $xyz + x'y + xyz'$ . (ii) $xz + x'yz$ . | 5M |

**UNIT-II**

- |   |   |                                                                                                              |    |
|---|---|--------------------------------------------------------------------------------------------------------------|----|
| 4 | a | Minimize the following Boolean function using K-Map<br>$F(A, B, C, D) = \sum m(0, 2, 4, 6, 8, 10, 12, 14)$ . | 5M |
|   | b | What is Decoder ? design 3:8 decoder?                                                                        | 5M |

**OR**

- |   |   |                                                 |    |
|---|---|-------------------------------------------------|----|
| 5 | a | Design & implement Half Adder with truth table? | 5M |
|   | b | Design & implement Full Adder with truth table? | 5M |

**UNIT-III**

- |   |   |                                                                                  |    |
|---|---|----------------------------------------------------------------------------------|----|
| 6 | a | Design D Flip Flop by using SR Flip Flop Explain the operation with truth table. | 5M |
|   | b | Write the differences between combinational and sequential circuits.             | 5M |

**OR**

- |   |  |                                                                                             |     |
|---|--|---------------------------------------------------------------------------------------------|-----|
| 7 |  | Implement 6-bit ring counter using suitable shift register. Briefly describe its operation. | 10M |
|---|--|---------------------------------------------------------------------------------------------|-----|

**UNIT-IV**

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|---|--|------------------------------------------------------------------|-----|
| 8 |  | Explain the following specifications<br>(i) Fan out (ii) Fan out | 10M |
|---|--|------------------------------------------------------------------|-----|

**OR**

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|---|--|------------------------------|-----|
| 9 |  | Explain about CMOS families. | 10M |
|---|--|------------------------------|-----|

**UNIT-V**

- |    |  |                                                                                                                      |     |
|----|--|----------------------------------------------------------------------------------------------------------------------|-----|
| 10 |  | Implement PLA circuit for the following functions<br>$F1(A,B,C) = \sum m(3,5,6,7)$ , $F2(A,B,C) = \sum m(0,2,4,7)$ . | 10M |
|----|--|----------------------------------------------------------------------------------------------------------------------|-----|

**OR**

- |    |  |                                                                 |     |
|----|--|-----------------------------------------------------------------|-----|
| 11 |  | What is RAM organization? Explain about Different types of RAM. | 10M |
|----|--|-----------------------------------------------------------------|-----|

\*\*\*END\*\*\*