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

B.Tech I Year II Semester Supplementary Examinations Dec 2019

DIGITAL LOGIC DESIGN

(CSE & CSIT)

Time: 3 hours

Max. Marks: 60

PART-A

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

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|---|---|---|----|
| 1 | a | What is a prime implicate? | 2M |
| | b | Define Pair, Quad, and Octet. | 2M |
| | c | List the differences between encoder and decoder. | 2M |
| | d | Define Propagation Delay. | 2M |
| | e | What is Cache Memory? | 2M |

PART-B

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

UNIT-I

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|---|---|--|----|
| 2 | a | Represent the decimal number 8861_{10} in i) BCD ii) Excess-3 | 4M |
| | b | Simplify and implementation the following SOP function using NOR gates
$F(A,B,C,D) = \sum m(0,1,4,5,10,11,14,15)$ | 6M |

OR

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|---|---|---|----|
| 3 | a | Explain the difference between analog and digital systems. | 5M |
| | b | Subtract $(111001)_2$ from $(101011)_2$ using 1's complement. | 5M |

UNIT-II

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|---|---|---|----|
| 4 | a | Simplify the Boolean expressions to minimum number of literals.
i) $X' + XY + XZ' + XYZ'$ ii) $(A+B)(A+C')(B'+C')$ | 5M |
| | b | Obtain the Complement of Boolean Expression
i) $A+B+A'B'C$ ii) $AB + A(B+C) + B'(B+D)$ | 5M |

OR

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|---|--|--|-----|
| 5 | | Reduce the expression $f(x,y,z,w) = \pi M(0,2,7,8,9,10,11,15)$.d (3,4) using K-Map. | 10M |
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UNIT-III

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| 6 | a | Explain about 2-bit Magnitude Comparator. | 5M |
| | b | Explain Full binary subtractor in detail.. | 5M |

OR

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| 7 | a | Explain about Binary Multiplier. | 6M |
| | b | Explain about the construction of 4 X 4 RAM. | 4M |

UNIT-IV

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| 8 | a | Write differences between Combinational & Sequential circuits. | 4M |
| | b | Design and draw the 3-bit up-down synchronous counter. | 6M |

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| 9 | | Explain the design of a 4-bit binary counter with parallel load in detail. | 10M |
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UNIT-V

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| 10 | a | Write differences between PROM, PLA & PAL. | 5M |
| | b | Explain about Hamming code. | 5M |

OR

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| 11 | | Construct the PROM using the conversion from BCD code to Excess-3 code. | 10M |
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END