

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

B.Tech. II Year II Semester Supplementary Examinations December-2025

DIGITAL LOGIC AND COMPUTER ORGANIZATION

(Common to CAD & CSM)

Time: 3 Hours

Max. Marks: 70

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

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|-----|---|-----|----|----|
| 1 a | What are the basic properties of Boolean algebra | CO1 | L2 | 2M |
| b | What is binary number system? | CO1 | L1 | 2M |
| c | What is Flipflop and different types of Flipflop ? | CO1 | L1 | 2M |
| d | List the types of Buses. | CO2 | L2 | 2M |
| e | What is the advantage of using Booth algorithm? | CO1 | L5 | 2M |
| f | What is floating point numbers? | CO3 | L2 | 2M |
| g | Define main memory and auxiliary memory | CO5 | L5 | 2M |
| h | Classify main memory and secondary memory. | CO5 | L2 | 2M |
| i | What is interrupt and classify? | CO6 | L1 | 2M |
| j | What is the need of buses and classify the bus structure? | CO6 | L2 | 2M |

PART-B

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

UNIT-I

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|-----|--|-----|----|----|
| 2 a | Convert the following into decimal into hexa decimal
i) (5386.34) 10 ii) (214.35)10 | CO1 | L2 | 5M |
| b | Simplify the following Boolean expressions using K-map
i) $F(x, y, z) = \sum m(2, 3, 4, 5)$ ii) $F(x, y, z) = \sum m(3, 4, 6, 7)$. | CO1 | L4 | 5M |

OR

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|-----|--|-----|----|----|
| 3 a | Differentiate between floating point representation and fixed-point representation. | CO2 | L2 | 5M |
| b | Design and implement the following Boolean function by 8:1 Multiplexer. $(A, B, C, D) = \sum m(0, 1, 2, 5, 7, 8, 9, 14, 15)$. | CO1 | L6 | 5M |

UNIT-II

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|-----|--|-----|----|----|
| 4 a | Explain the working principle of SR and JK flip-flops | CO1 | L2 | 5M |
| b | Give the Structure of BUS Interface with various devices in computer | CO6 | L2 | 5M |

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|-----|---|-----|----|----|
| 5 a | Explain in detail about 3-bit ripple Up-counter using suitable diagram. | CO1 | L2 | 5M |
| b | Explain briefly about the Von- Neumann Architecture of a computer. | CO3 | L2 | 5M |

UNIT-III

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|-----|--|-----|----|----|
| 6 a | Develop flow chart for the addition/subtraction of floating-point number and illustrate with an example. | CO1 | L6 | 5M |
| b | What is Hardwired Control? Explain in detail with a neat diagram. | CO4 | L3 | 5M |

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| 7 a | Explain the fundamental concept in processor organization. | CO3 | L3 | 6M |
| b | Explain the multiple bus organization. | CO3 | L3 | 4M |

UNIT-IV

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|-----|---|-----|----|----|
| 8 a | Explain different types of ROM memories in detail. | CO5 | L2 | 6M |
| b | Describe the secondary storage and explain with a neat block diagram. | CO5 | L1 | 4M |

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| 9 a | Describe about memory hierarchy concept in detail? | CO5 | L1 | 5M |
| b | What is Virtual Memory? Discuss how address mapping using pages. | CO5 | L3 | 5M |

UNIT-V

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|------|---|-----|----|----|
| 10 a | Explain how to access input and output devices in detail. | CO6 | L2 | 5M |
| b | Explain about input and output interface circuits. | CO6 | L3 | 5M |

OR

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|------|--|-----|----|----|
| 11 a | Distinguish between Centralized arbitration and Distributed arbitration. | CO6 | L2 | 5M |
| b | Compare data, address and control buses. | CO6 | L2 | 5M |

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