TB251564H

Reg. No :.....

Name :.....

BACHELOR'S DEGREE EXAMINATION, OCTOBER 2025

2025 ADMISSIONS REGULAR

SEMESTER I - MAJOR (COMPUTER APPLICATIONS)

CP1DSC02B24 - Digital Fundamentals

Time : 2 Hours

Maximum Marks : 70

Part A

Answer all question from the bunch of CO1. Each question carries 2 mark. (2x1=2)

1. Define 2's complement of $(10110)_2$? [CO1,Understand]

Part A

Answer all question from the bunch of CO2. Each question carries 2 mark. (2x1=2)

2. Prepare the dual expression of A+0=A [CO2,Apply]

Part A

Answer all questions from the bunch of CO3. Each question carries 2 mark. (2x3=6)

3. Explain the purpose of a decoder? [CO3,Understand]
4. Explain why a full adder considered more powerful than a half adder? [CO3,Understand]
5. Define multiplexer. [CO3,Understand]

Part B

Answer any 2 questions from the bunch of CO3. Each question carries 6 mark. (6x2=12)

6. Explain one real-life application each of multiplexer and demultiplexer. [CO3,Understand]
7. Explain the working of a 4-to-1 multiplexer with diagram. [CO3,Understand]
8. Describe how a demultiplexer distributes input signals to outputs. [CO3,Understand]

Part B

Answer any 3 questions from the bunch of CO4. Each question carries 6 mark. (6x3=18)

9. Explain the applications of registers in microprocessors. [CO4,Understand]
10. Compare level triggering and edge triggering in flip-flops. [CO4,Understand]
11. Compare shift register and buffer register. [CO4,Understand]
12. Explain the concept of registers in sequential logic circuits. [CO4,Understand]

Part C

Answer any 1 question from the bunch of CO1. Each question carries 15 mark. (15x1=15)

13. Describe the step-by-step process for converting numbers from one base to another with examples. [CO1,Understand]
14. Explain conversion of decimal number (e.g., 357) into binary, octal, and hexadecimal with neat steps, and verify correctness. [CO1,Understand]

Part C

Answer any 1 question from the bunch of CO2. Each question carries 15 mark. (15x1=15)

15. Demonstrate $F(A,B,C,D) = \Sigma(0,1,2,5,7,8,9,10,14)$ using a 4-variable K-map. Show groupings and implement using NAND gates. [CO2,Apply]
16. Construct the truth tables for AND, OR, XOR, and XNOR gates. Compare their outputs and explain their graphical representations. [CO2,Apply]