

2025

2nd Semester Examination (CCFUP : NEP)

BCA

Paper : MJ 2-T (Single Core Major)

(Digital Electronics)

Full Marks : 40

Time : Two Hours

The figures in the margin indicate full marks.

*Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any *five* questions : $2 \times 5 = 10$

1. What is the difference between combinational and sequential circuit?
2. Represent decimal value -7 in an 8-bit signed number in 2's complement system.
3. What is negative logic system?
4. Define the terms Propagation delay.
5. What are the differences between level triggering and edge triggering?
6. What is the significance of Karnaugh maps (K-maps)?

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7. What is truth table and literal?

8. What is a latch? How does it differ from a flip-flop?

Group - B

Answer any *four* questions : $5 \times 4 = 20$

9. Show how a multiplexer can be used to implement a logic function.

10. Implement a full adder circuit using NAND gate only.

11. Simplify the following Boolean functions in POS form
 $F(A, B, C, D) = \Sigma(0, 1, 2, 5, 8, 9, 10)$.

12. Explain the working principle of a 4-bit synchronous counter.

13. The octal number $(651.124)_8$ is equivalent to $(XA9.YZ)_{16}$. Then what is the value of X, Y and Z?

14. Perform BCD addition : $01100111 + 01010011$. What is overflow? $3+2$

Group - C

Answer any *one* question : $10 \times 1 = 10$

15. Design a MOD-3 synchronous counter and provide truth table. $8+2$

16. Design a J-K flip-flop using D flip-flop.
