



B.Sc./3rd Sem/COS/25(NEP)

2025

3rd Semester Examination (CCFUP : NEP)

COMPUTER SCIENCE

Paper : MJ 4-T (Single Core Major)
(Computer Architecture)

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. Write the symbol and truth table of XOR gate.
2. What is a flip-flop? Give an example. 1+1
3. What do you mean by addressing mode? Give one example. 1+1
4. Distinguish between combinational and sequential circuit.
5. Mention two differences between hardwired and microprogrammed control units.
6. Write the Boolean expression for a 3-input XOR gate.
7. Define cache memory. Why is it needed? 1+1
8. What is meant by Micro-Operation?

P.T.O.

(2)

Group - B

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

9. Describe the organization of a basic single-bus computer system.
10. Explain the working of a D flip-flop with a neat logic diagram and truth table.
11. Describe fixed-point and floating-point representation with suitable examples.
12. Explain Programmed I/O with suitable diagram.
13. Describe instruction pipeline and discuss its advantages and limitations. $2+3$
14. What is interrupt? Describe different types of interrupt. $2+3$

Group - C

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

15. Explain the architecture and working principle of a microprogrammed control unit. Explain its advantages and disadvantages. $6+4$
 16. Describe in detail the classification of memory units. Explain cache memory organization with block diagram and functions. $4+6$
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