

Only for 2021 -
2022 AD
admitted Regular
Students

TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
October 2023

Full Marks: 60
Pass Marks: 30
Time: 3 Hrs.

BIM / Second Semester / IT 233: Digital Logic

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions:

[10 × 1 = 10]

1. What will be the value of $x + xy$ according to Boolean rule?
2. Define Digital System.
3. Prove any statement of Demorgan theorem for two variable using truth table.
4. What is asynchronous counter?
5. Differentiate between positive edge triggering and negative edge triggering.
6. How the number of cell is determine in a K – map?
7. Define ROM.
8. Convert gray code: 1011 to binary.
9. Define POS.
10. Define shift register.

Group "B"

Short Answer Questions: (Attempt any FIVE Questions)

[5 × 3 = 15]

11. Convert $(2A31)_{16}$ into decimal, binary and octal form.
12. Realize the property of NOT, NOR and AND gate using NAND gate.
13. Compute $(-20)_{10} + (+30)_{10}$, using 2's complement method.
14. List out the design procedure of combinational circuit.
15. Design 1×4 D- multiplexer.
16. Write the expression in SOP for the following Karnaugh Map:

AB/CD	00	01	11	10
00	1	1	0	1
01	0	0	1	×
11	×	×	1	1
10	1	0	0	×

Group "C"

Long Answer Questions: (Attempt any THREE Questions)

[3 × 5 = 15]

17. Design MOD-120 Asynchronous counter.
18. Design a circuit diagram for 3 – bit binary adder.
19. What is bidirectional register? Explain with example.
20. Minimize the boolean function: $f(M, N, P, R) = \sum(0, 3, 5, 7, 9, 10, 12, 15,)$ with don't care condition $d(M, N, P, R) = \sum(2, 4, 6, 8)$ using K-map and design a circuit diagram with a simplified expression.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions:

[2 × 10 = 20]

21. Analyze the property of flip-flop which will have indeterminate state when set and reset inputs are "1" and illustrate the operational characteristics of flip-flop that solve the mention problem.
22. Design 8×3 Encoder. Analyze the number of don't care condition in the design of 8×3 encoder.



ABC
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