

Tribhuvan University
Institute Of Science and Technology
2071



Computer Science and Information Technology (CSc. 151)
(Digital Logic)

Full Marks: 60
Pass Marks: 24

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Long Answer Questions:

Attempt any two questions.

(2x10=20)

1. What are the various types of numbering systems use in digital logic? Explain. Convert the 3EC8₁₆ into different numbering system that you know.
2. Design the mod – 6 asynchronous counter and explain with truth table.
3. What is demultiplexer? Draw its block diagram and explain its working principle.

Short Answer Questions:

Attempt any eight questions.

(8x5=40)

4. Convert the hexadecimal number 2BCF to binary and then to octal.
5. Proof the De-Morgan 1st and 2nd theorem with truth table and logic gates.
6. Simplify the following Boolean function using three variables K-map.
(a) $F(X, Y, Z) = \sum(0, 3, 2, 5)$
(b) $F(A, B, C) = \sum(0, 2, 4, 5, 6)$
7. Simplify the Boolean expression.
$$Y = \overline{A} \cdot \overline{B} + \overline{A} + \overline{B}$$

Prepare truth table to show that the simplified expressions is correct or not?
8. Explain the PLA (Programmable Logic Array).
9. How JK flip flop can convert into a D – flip flop? Explain.
10. What do you mean by synchronous counter? Explain with truth table.
11. Draw a 3 to 8 decoder circuit and explain its operation.
12. Mention the difference types of shift registers and explain.
13. Write short notes on:
 - (a) CMOS
 - (b) Universal gates
 - (c) Error detection code

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