

Tribhuvan University
Institute of Science and Technology
2071

Bachelor Level / First Semester / Science

Computer Science and Information Technology(CSC111)

((TU CSIT) Digital Logic)

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

The figures in the margin indicate full marks.

Full marks: 60

Pass marks: 24

Time: 3 hours

Long Questions:

Attempt any two questions: (2 × 10=20)

1. What are the various types of numbering system use in the digital logic? Explain. Convert the $3EC_{16}$ 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 Questions:

Attempt any eight questions: (8 × 5=40)

4. Convert the hexadecimal number 2BFC 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 variable 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. $\overline{A + B} + \overline{A + B} =$
prepare truth table to show that the simplified expression is correct or not?
8. Explain the PLA (Programmable Logic Array).
9. How JK flip flop can convert into a D-flip flop?
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 register and explain.
13. Write short notes on:-
 - a) CMOS

b) Universal gates

c) Error detection code