

Tribhuvan University
Institute of Science and Technology
2080
☆☆

Bachelor Level / First Year/ Second Semester/ Science
Computer Science and Information Technology (CSC 151)
(Digital Logic)
(VERY OLD COURSE)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

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

Group A

Long Answer Questions.

Attempt any TWO questions.

(2×10=20)

1. Explain the concept of ripple counter with required timing diagram. List its applications. (8+2)
2. Design a circuit with utilization of PLA to implement the following functions (10)
 $F1(A, B, C) = (3, 5, 6, 7)$
 $F2(A, B, C) = (0, 2, 4, 7)$
3. Illustrate the practical implications of flip flop. Explain the concept of master slave J-K flip flop. (2+8)

Group B

Short Answer Question Section

Attempt any EIGHT questions.

(8×5=40)

4. Represent 127 in (5)
 - a) Binary
 - b) Hexadecimal
 - c) Octal
5. List theorems of Boolean algebra and explain them. (1+4)
6. Design a full adder using only NAND gates. (5)
7. Design a combinational circuit with three inputs and one output. The output is 1 when the binary value of the input is less than 3. The output is 0 otherwise. (5)
8. Design a logic circuit of 4 bit magnitude comparator. (5)
9. What is state table? Explain the procedure of designing asynchronous sequential circuit. (1+4)
10. What are different types of shift registers? Explain. (5)

11. Simplify the following Boolean expression using K-map

(5)

$$F(A,B,C,D) = \sum m(0,1,2,3,4,6,7,8,9,11,15)$$

12. Write short notes on:

(2×2.5=5)

- a) SOP
- b) Decoder