TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
2013

Full Marks: 40
Time: 2 Hrs.

BIM / First Semester / ITC 212: Digital Logic

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

Group "A"

Brief Answer Questions:

[10 × 1 = 10]

1. Convert 1001.011_{10} into binary.
2. Simplify XYZ+X'Y'Z+Y'Z to a minimum number of literals.
3. On what basis flip-flop is categorized?
4. Calculate output frequency if MOD - 45 counter is inputted with 9 KHZ frequency.
5. Why the output of last flip flop is connected to the input of first flip flop in case of Ring Counter?
6. Differentiate between PLA and PAL.
7. In case of memory read operation what is the function of data register?
8. Compare between LCD and LED on the basis of power consumption, viewing angle and picture quality.
9. List out the application area of ECL.
10. Differentiate between SOP and POS.

Group "B"

Short Answer Questions:

[5 × 4 = 20]

11. (a) If A=25 and B=-9, then calculate B-A and A-B using 2's Complement concept.
    (b) Increase in quantization bit increase the signal quality, explain with example
12. What is similarity and differences between JK flip-flop and T flip flop explain with the help of circuit diagram and characteristic table?
13. Design a circuit that display 4, 5 and 8 in seven segment display.
14. You are provided with a bit sequence 101 to operate with serial in serial out shift register. Draw the circuit diagram and timing diagram to illustrate the procedure to store and retrieve those bits.
15. Design an asynchronous MOD-156 counter.

Group "C"

Long Answer Questions:

[2 × 5 = 10]

16. Express the Boolean function F=X+Y'Z in a Standard POS and simplify it using K-map and draw circuit diagram using NAND Gates only.
17. Design a sequential machine if you are provided with a sequence 010 and at the end of this sequence, the output of the Sequential Machine should be at logic 1.