# **TRIBHUVAN UNIVERSITY** FACULTY OF MANAGEMENT Office of the Dean

# 2010

#### Full Marks: 40 Time: 2 hrs.

# BIM/ First Semester/ITC 212: Digital Logic

Candidates are required to answer the questions in their own words as far as practicable Group 'A'

# Attempt All questions:

# Brief Answer Questions:

- 1. Convert  $(67.51)_8$  to hexadecimal.
- 2. Write one advantage of alphanumeric code from other codes.
- **3.** Why k-map is suggested only for limited number of variables?
- 4. Draw a circuit diagram to count 6 different numbers using Johnson counter.
- 5. Simplify: AB + A'B' + ABC'D' + A'B
- 6. Write one application area of ECL and CMOS each.
- 7. A memory contains 1696 distinct cell; which is organized in such a fashion that 32 bit data can be Read/Write once. Find out the input and output of address decoder.
- 8. Why is PLA better than PAL?
- 9. How many flip flops are required to generate a 7 Hz pulse from 56 Hz pulse?
- 10. What is the minimum number of inverters required to find the 2's complement of (10110000)<sub>2</sub>?

# Group 'B'

#### **Short Answer Questions:**

- **11. a.** If A=37 and B=-18, then calculate B-A using 2's Complement concept.
  - **b.** Write two advantages of Analog and Digital technology each.
- 12. Differentiate between T and D flip-flop along with its truth table and circuit diagram.
- 13. Draw a circuit diagram to display A, B, C, D, E and F in seven segment display.
- **14.** You are provided with a bit sequence 1101 to operate with serial in parallel out register. Draw the circuit diagram and functional table to illustrate the procedure to store and retrieve those bits.
- 15. Design an asynchronous MOD-88 counter.

## Group 'C'

#### Long Answer Questions:

**16.** Minimize the given expression using k-map and draw the logic diagram using minimum number of NAND gate only.

### ABC + BC'D + CD' + AB'D' + A'BCD + A'B'C'D'

17. Design a synchronous sequential circuit using T flip flop with one input A and an output B. The input A is a serial message and the system reads A one bit at time. The output B=1 whenever the pattern 101 is encountered in the serial message.

For example: if input : 0101011101 then output :0001010001

[5×4=20]

#### [2×5=10]

[10×1=10]