TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
January 2021

Full Marks: 60
Pass Marks: 30
Time: 1.5 Hrs.

BIM / First Semester / IT 212: Digital Logic Design

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

Answer any SIX questions: [6 × 10 = 60]

1. (a) If A = $(101)_{10}$ and B = $(11)_{10}$, then calculate B-A using 2's Complement method.

   (b) Convert $(1983.22)_{10}$ to octal.

2. If F= (A+B+D)' (A+C) (A+C+D)' (A'+B+C') then minimize it using K-MAP and design a circuit using minimum number of NOR gates only.

3. Design 1X11 de-multiplexer using NAND gates only.

4. Design MOD 33 asynchronous counter.

5. Design Bidirectional shift register and operate it with 110111 from both ends.

6. Design a sequence recognizer that detect the sequence 1001, the machine will produce output "1" when a given sequence is detected, if not detected the output will be "0".

7. Illustrate the differences between T and D Flip-Flop along with its characteristics table, excitation table and characteristics equation.

8. Write Short Notes on :

   a. PLA

   b. ULSI

   c. Memory organization

   d. Digital Codes

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