Tribhuvan University Institute of Science and Technology 2073

Bachelor Level/ First Year/ First Semester/ Science Full Marks: 60

Computer Science and Information Technology (CSc. 111) Pass Marks: 24

(Digital Logic) Time: 3 hours.

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

Long Questions:

Attempt any two questions: $(2 \times 10=20)$

- 1. Explain the magnitude comparator and also design a logic diagram for 4 bit magnitude comparator.
- 2. What do you mean by decoder? Design a 3 to 8 line decoder using 2 to 4 line decoder and explain it.
- 3. What do you mean by ripple counter? Explain the design procedure of sequential circuits.

Short Questions:

Attempt any eight questions: $(8 \times 5=40)$

- 4. Convert the following hexadecimal number to decimal and octal numbers.
 - **a)** 4FF
 - **b)** 6FED
- **5.** Explain the error detection code with example.
- **6.** Explain the duality theorem with example.
- 7. Design half adder logic circuit using only universal gates.
- **8.** Draw a logic circuit of 8*1 multiplexer.
- **9.** Design the 4 bit parallel binary adder.
- 10. Explain the PLA with the block diagram.
- 11. Explain the R-S flip flop with truth table.
- 12. Explain the shift register with example.
- 13. Write short note on (any two):
 - a) Binary counter
 - **b)** State reduction
 - c) Negative edge triggering