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 × 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 × 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