Tribhuvan University

Institute of Science and Technology

2074

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.

Attempt any two questions:

1. Implement the following function F=E(0,3,5,6,7) using
   a). Decoder
   b) multiplexer
   c) PLA

2. Differentiate between PLA And PAL. Design A counter.
3. Dwar a block diagram, truth table and logic circuit of 1*16 Demultiplexer and explain its working principle.

Attempt any eight questions:

4. Perform arithmetic operation (+42)+(-13) and (-42)-(-13) in binary using the signed using 2's compliment.
5. Express the complement of the following function in sum of min terms.
   F(A,B,C,D)=E(0,2,6,11,13,14)
6. Reduce the following function using K-map
   F=wxy+yz+xy'z+z'y
7. Design a combinational circuit with three inputs and six outputs.
8. Dsign a 5*32 decoder with four 3*8 decoder and one 2*4 decoder. Use block diagrams only.
9. Design and explain the decimal adder with truth table and suitable diagram.
10. Explain shift register with parallel load. Highlight on its practical implications.
11. Explain master slave j-k flipflop
12. Short notes on (any two):-
    A) State diagram
    B) De-morgan's theorem
    C) TTL