Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Back Exam-2080 Mangsir/Poush (Scholarship)

Program: Diploma in Information Technology | **Full Marks: 80**

Year/Part: I/II (2016) | **Pass Marks: 32**

Subject: Digital Logic | **Time: 3 hrs.**

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

Attempt any TEN questions.

1. Define analog and digital signal in short. Mention the advantages of digital signal over analog signal. [4+4]
2. Explain binary number system. Convert the following: [2+6]
   i. $(1011)_2=(?)_{10}$ ii. $(37)_{10}=(?)_2$
   iii. $(BAF)_{16}=(?)_{10}$
3. Explain D–flip flop and T flip flop with their truth table. [4+4]
4. Define shift registers. Explain SISO and SIPO shift registers. [2+6]
5. What are counters? Explain ripple counter. [2+6]
6. What are decoders? Explain 4 to 1 multiplexer and 1 to 4 demultiplexer. [2+3+3]
7. Perform the following: [4×2]
   i. $(1000)_2+(1101)_2$ ii. $(101)_2-(01)_2$
   iii. $(1111)_2\div(101)_2$ iv. $(1011)_2\times(101)_2$
8. What do you mean by logic families? Introduce TTL, ECL and RTL families in short. [2+6]
9. What do you mean by universal gates? Explain the universal properties of NAND gate. [2+6]
10. Minimize the following expression: [8]
    $F = \sum m\,(0,7,8,9,10,12) + \sum d\,(2,5,13)$; using k-map.
11. Differentiate combinational and sequential logic circuit with example. Explain 7-segments display. [4+4]
12. Write shot notes on: (any **TWO**) [2×4]
    a. Full Adder
    b. SOP and POS
    c. Alphanumeric Code
    d. Master Slave JK flip flop

Good Luck !