Council for Technical Education and Vocational Training

Office of the Controller of Examinations

Sanothimi, Bhaktapur

Regular/Back Exam-2078, Magh/Falgun

Program: Diploma in Computer Engineering **Full Marks:80**

Year/ Part: I/II (2018) **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 Five Questions.

1. a) Differentiate analog and digital signals. What do you mean by positive and negative logic. [6+2]

   b) Perform following task : [4x2]

   i Convert $(41.6875)_{10}$ into binary

   ii Convert $(1001)_2$ into BCD

   iii Convert $(1011)_2$ into decimal

   iv Convert $(12AB)_{16}$ into decimal

2. a) Explain about basic gates with necessary truth table and logical expression. [8]

   b) Explain universal gates and why are they called so? Reduce the following expression using k-map. [2+6]

   $F(A,B,C,D) = \sum(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$

3. a) State and prove De-Morgan theorem using troth table and logic diagram. Subtract $(11101010)_2$ from $(11111000)_2$ using 2's complement. [5+3]

   b) Explain the working of 8 to 1 multiplexer with necessary diagram and truth table. What do you mean by combinational logic circuit? [6+2]

4. a) Define Boolen Algebra. State and explain basic properties of Boolen Algebra. [2+6]

   b) Design BCD to Decimal decoder with necessary diagram and truth table and mention different types of decoder IC package. [6+2]

5. a) Define latch and flip-flop. Explain JK flip-flop with all necessary diagram ; symbol, truth table. [2+6]

   b) Explain Ripple up counter with timing diagram. [8]

6. Write short notes on : **(Any Four)** [4x4=16]

   i) SISO shift register ii) LCD display

   iii) 7- Segment Display iv) Half adder

   v) Alphanumeric code

Good Luck !