# Tribhuvan University

**Faculty of Humanities & Social Sciences**
**OFFICE OF THE DEAN**
**2018**

**Bachelor in Computer Application**                                          **Full Marks:- 60**
**Course Title: Digital Logic**                                                       **Pass Marks:- 24**
**Semester: 1ˢᵗ**                                                                                **Time:- 3hrs**

**Candidates are required to answer the questions in their own words as far as possible.**

## Group B

**Attempt any SIX questions.**                                                                    **[6x5=30]**

11. Subtract 675.6 - 456.4 using 10's and 9's complement.                          [5]
12. What is university logic gate? Realize NAND and NOR as a universal logic gates.          [1+2+2]
13. Simplify(using K-map) the given Boolean function F in both SOP and POS using don't care conditions A:

    F=B'C'D + BCD' + ABCD' + B'CD' + A'BC'D                                      [2+3]
14. Define encoder. Draw logic diagram and truth table of octal-to-binary encoder.          [1+4]
15. What is D flip-flop? Explain clocked RS flip-flop with its logic diagram and truth table.          [1+4]
16. Design MOD-5 counter with state and timing diagram.                          [2+1+2]
17. Design a 4-bit serial into parallel-out shift register with timing diagram.          [3+2]

## Group C

**Attempt any TWO questions.**                                                                    **[2x10=20]**

18. Write difference between PLA and PAL. Design PLA circuit with given functions,

    F1 (A, B, C) = ∑ (2, 3, 5)

    F2 (A, B, C) = ∑ (0, 4, 5, 7). Design PLA program table also.          [3+7]
19. Define D flip-flop. Design a Master-slave flip-flop by using JK flip-flop along with its circuit diagram and truth table.          [2+8]
20. Write down the difference between asynchronous and synchronous counter. Design a 4-bit binary ripple counter along with its circuit, state and timing diagram.          [3+7]