



Tribhuvan University
Faculty of Humanities & Social Sciences
OFFICE OF THE DEAN
2020

Bachelor in Computer Applications
Course Title: Digital Logic
Code No: CACS 105
Semester: I

Full Marks: 60
Pass Marks: 24
Time: 3 hours

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

Group B

Attempt any SIX questions.

[6×5 = 30]

2. Define digital logic. Explain digital signal with its applications, advantages and disadvantages. [1 + 4]
3. Define positional number system. [1]
Calculate following:
 - a) Subtract 21 from 35 using 2's complement method. [2]
 - b) Convert $(62.75)_{10}$ into single precision floating point format. [2]
4. Define universal gate. Explain Universal gates with their graphical symbol, algebraic expression, truth table, and Venn diagram. [1 + 4]
5. Define decoder. Explain binary to octal convertor with block diagram, truth table and logic diagram. [1 + 4]
6. Simplify the Boolean function $F(w, x, y, z) = \pi(0, 2, 4, 6, 8, 10, 12, 14)$ and don't care conditions $d(w, x, y, z) = \pi(1, 3, 9, 11)$ using K-Map method for both SOP and POS form. [2.5 + 2.5]
7. Define Multiplexer. Explain 4:1 multiplexer with its block diagram, truth table and logic diagram. [1 + 4]
8. Write Short Notes on (Any two): [2.5 + 2.5]
 - a) Parallel Adder
 - b) PLA
 - c) State Diagram

Group C

Attempt any TWO questions.

[2×10 = 20]

9. Explain JK and T Flip-flops with their logic diagram, graphical symbol, characteristic table, characteristic equation and excitation table. [5 + 5]
10. Differentiate between asynchronous and synchronous sequential circuits with example. Draw a block diagram, truth table and timing diagram to store 1001 in 4-bit SIPO register. [4 + 6]
11. Define counter. Write a procedure to design a counter circuit. Design MOD-8 up counter. [1 + 2 + 7]