

**NED UNIVERSITY OF ENGINEERING & TECHNOLOGY**  
**DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY**  
**FSCS/FSGA, Midterm Examinations Spring 2024**

**Time: 90 minutes**

**LDST (CS-251) - A**

**Max Marks: 20**

**Note: Attempt all questions.**

Q-1) Simplify using Boolean Algebra.

CLO-2, C3 , PLO-2 /5

- i.  $(A+B) (\bar{A} + AB) + (\bar{B} + A\bar{B})$       ii.  $A+B (AC + (B+\bar{C}) D)$

Q-2) Solve the following:

CLO-1 , C2 , PLO-1 /5

- i. Using addition with 2's Complement , calculate the sum of **0011** and **-0101**  
ii. Subtract **(1010)** from **(1111)** using 1's complement method

Q-3 What is the need of changing entire circuit in NAND and NOR gates? What is the NAND Equivalent of  $(\bar{A}B + A\bar{B})$

CLO-2, C3 , PLO-2 /5

Q-4) Design a logic circuit whose output is 1 if majority of the inputs is 1. Consider a 3 bit input.

CLO-2, C3 , PLO-2 /5