

**National University**



of Computer

and

Emerging Sciences

Chiniot

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Faisalabad Campus



**EE1005 – Digital Logic Design**

**CP#3**

**Fall 2024**

**Instructor:** Muhammad Adeel Tahir

**Sections:** BSCS 3N

**Total Marks:** 50 **Deadline:** Wednesday, 18September 2024

**Question 1:** Draw the circuit diagram of each expression and then after simplification using Boolean laws, construct the simplified circuits as well.

1. AC’D’ + A’C + ABC + AB’C + A’C’D’
2. (A’ + B)’(A’ + C’)’(AB’C)’
3. A’B’D+A’C’D+BD = D(A’B’+B) + A’C’D
4. x’y’z + x’yz + xy’z’ + xy’z + xyz’ + xyz
5. w’x’yz + w’xyz + wx’yz + wxy’z’ + wxy’z + wxyz’ + wxyz
6. w’x’yz’ + w’x’yz + wxy’z’ + wxy’z + wxyz’ + wxyz

**Question 2:** Apply demorgan’s law to the following expressions

* 1. (XYZ)’
  2. (X + Y + Z)’
  3. (WXYZ)’
  4. (W + X + Y + Z)’

**Question 3:** Construct a gate circuit using AND, OR, and NOT gates that corresponds one to one with the following switching algebra expression. Assume that inputs are available only in uncomplemented form. (Do not change the expression.)

**Question 4:** Draw a circuit that uses only one AND gate and one OR gate to realize each of the following functions (only most efficient approach will be marked as correct):

**Question 5:** Find F and G and simplify using Boolean laws.

