



National University

of Computer & Emerging Sciences Peshawar Campus



Student Name: Shorib Akhlaq

Roll No: _____

Program:

Semester: Spring-2021

Time Allowed: 02:30 hours

Course: _____

Examination: Final

Total Marks: 55 Weightage: 40

Date:

Instructor Name: Muhammad Usman

NOTE:

- Attempt all 5 questions.
- Label your inputs and outputs properly on Logically.
- Only submit **.logically** file of each question in a folder. Anyone who submits any other format file will get straight ZERO. Each question should have a separate **.logically** file. Copy Paste or other UFM will also get ZERO. Use the following format for naming the folder Roll#_Name_Section (P18-1234_XYZ_2B).

Q1 (Marks:10). Design full-subtractor using 3x8 Decoder and external OR Gates on Logically.

Q2 (Marks:10). Design (truth table, boolean functions) and implement the circuitry for an Excess 3 to BCD Code Converter on Logically.

Q3 (Marks:10). Design (truth table, boolean functions) and implement the circuitry for 2 bit magnitude comparator on Logically.

Q4 (Marks:10). Design and Implement the circuitry for full adder and store sum and carry in D Flip Flops on Logically. (Note: Don't use any builtin IC for D FlipFlop).

Q5 (Marks:15). Implement the following Boolean expression with the help Half Adders on Logically.

i. $F = C.(A'.B.D + A.B'.D)$

ii. $F = A.B.C' + (A' + B').C$

Good Luck ☺