

COE 202, Term 122

Digital Logic Design

Assignment# 1

Due date: Sat. March 30

- Q.1.** You are required to design a circuit that receives a 4-input number X and produces an output that computes the equation $Y=2*X+1$.
- (i) Show the truth table for the circuit to be designed.
 - (ii) Derive minimum sum of product expressions for the circuit outputs.
 - (iii) Optimize the derived output equations by extracting common expressions to obtain multilevel circuits.
 - (iv) Implement your circuit using logic works.
 - (v) Demonstrate the correctness of your circuit for the following inputs: 0, 3, 7, 10, 15. Include simulation snapshots.

This assignment can be solved based on a group of two students. Include snapshots of simulation output to illustrate the correctness of your circuit. Submit your solution as a word document along with the circuit in one zipped file.