



Department of Electrical Engineering

Course Title: INDUSTRIAL ELECTRONICS

Instructor: Engr. SanaUllah Ahmad

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Name: MUHAMMAD YASIR  
13122

Student ID:

QUESTION 1:

MCQ,s:

1) : (a) Increases (b) Increases (c) Decreases (d) Decreases

2) : (a) Safety glasses  
(b) Safety gloves, Safety shoes, Safety hat  
(c) Safety gloves, Safety shoes and Hat

3) : Third

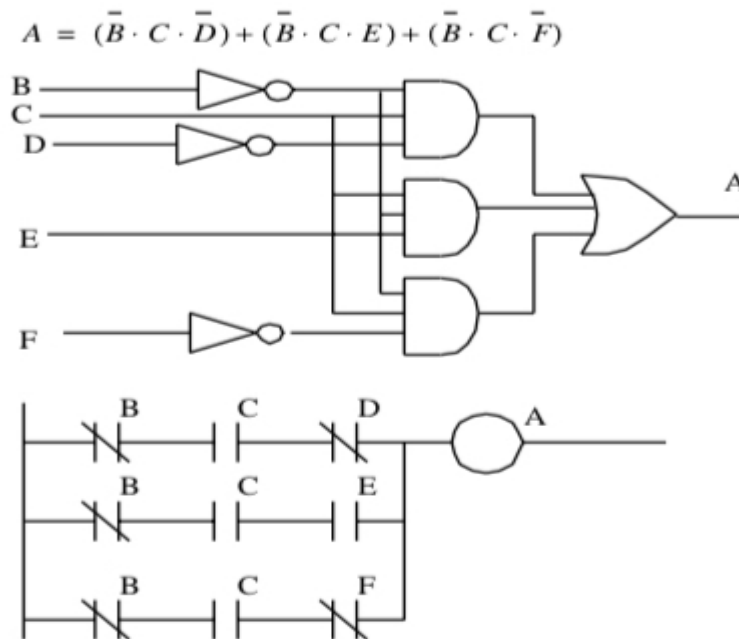
4) : Reducing

5) : Transducer

QUESTION 2:

Answer:

Equation is simplified, it may not look like the original design intention, and therefore becomes harder to rework without starting from the beginning.

**QUESTION 3:**

Answer:

**Number of PLC Outputs Required:**

- Y0 – Liquid A Inlet
- Y1 – Liquid B Inlet
- Y2 – Mixture Outlet
- Y3 – Agitator

**Number of PLC Timer Required:**

- T0 – 60 second Timer, 100 ms Time Base.
- T1 – 120 second Timer, 100 ms Time Base.

**Number of PLC Inputs Required:**

- X1 – Start Switch.
- X1 – Low level float sensor. X1 = ON when the liquid level reaches X1.
- X2 – High level float sensor. X2 = ON when the liquid level reaches X2.
- X3 – Stop Switch.
- X10 - EMERGENCY STOP button. X10 = ON when the button is pressed.

### PLC Ladder Programming:

