(ASAD SHOAIB KHALIL) (13095) (Industrial Electronics)

"Question # 1"

Answer :-

Multiple choice Question.

(i) Decreases in source voltage.

(ii) Opening a manually operated high voltage disconnet switch.

(iii) Fourth

(iv) Third

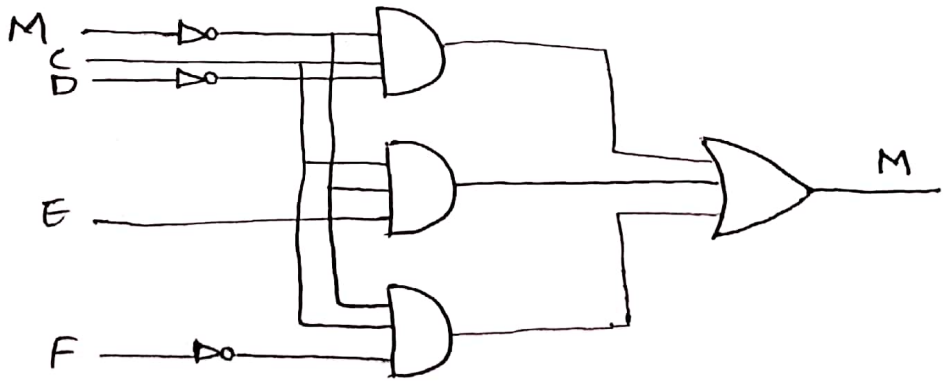
(v) Transducer.

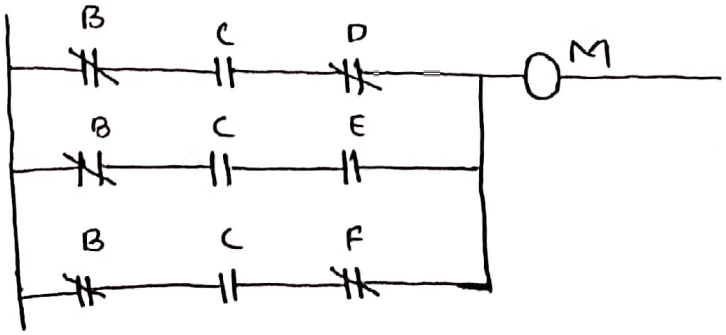
X X

"Question #2".

Answer :-

$$M = B'CD' + B'CE + B'CF'$$





Question # 3:

Answer:

Ladder program Description:-

- X_0 = ON when start is pressed. Y0 will be ON and latched, and the value will be opened for infusing liquid A until the level reaches the low level float sensor.
- X1 = ON when the level reaches the low level float sensor. Y1 will be ON & latched and the value will be opened for infusing liquid B until the level reaches the high-level float sensor
- X2 = ON when the level reaches the high level float sensor. Y3 will be ON & actives the agitator.
- When Y_2 = ON, timer T1 will start to count for 120sec After 120sec, T1 will be ON & Y_2 will be OFF. The draining process will be stoped.
- When an error occurs, press EMERGANCY STOP button X10. The Nc contact X10 will be ON to disable all the outputs. The system will then stop running.

Number of PLC inputs required :-

X_1 – start switch

X_1 – low level float sensor. X_1 = ON when the Liquid level reaches X_1

X_2 – High level float sensor. X_2 = ON when the liquid level reaches X_2

X_3 – stop switch

X_{10} – EMERGANCY STOP button. X_{10} = ON when button is pressed

Number of PLC outputs Required :

Y_0 = Liquid A is Inlet

Y_1 = Liquid B Inlet

Y_2 = Mixture of Outlet

Y_3 = Agitator / Stirrer

Number of PLC timer Required :-

T0 - 60 second timer, 100ms Time Base

T1 - 120 second timer, 100ms Time Base.