



**IQRA National University, Peshawar
Department of Electrical Engineering
Spring 2020**

**Industrial Electronics
*Assignment***

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Question No 1

Multiple choose question

1)d

2)b

3) c

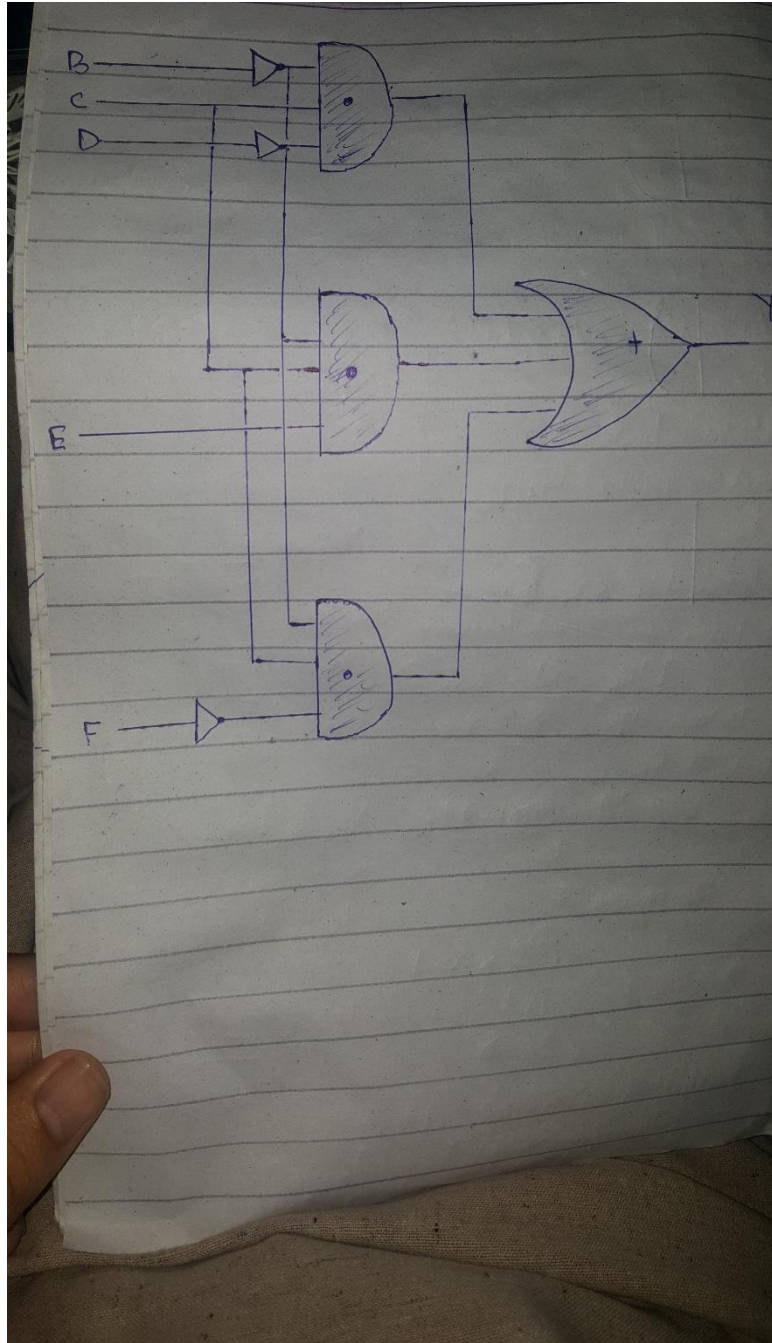
4) a

5) b

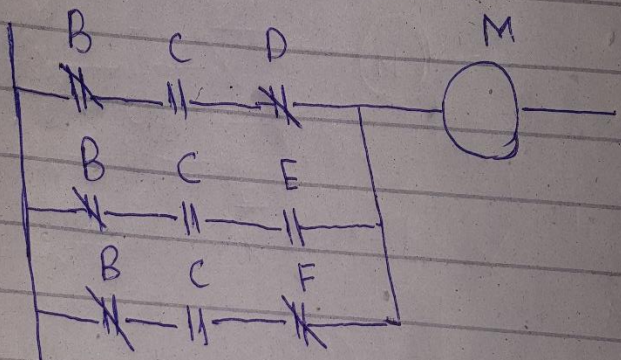
Question No 2

$$M = B' C D' + B' C E + B' C F'$$

The digital logic circuit of the given Boolean function screen shot is given below



ladder diagram of the above screen shot is given below



Question No 3

Ladder program description

- X0=on when start is pressed and Y0 will be on and latched and the valve will be open 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 and latched and the valve will be open for infusing liquid B until the reaches the level float sensor
- X2=on when the level reaches the high level float sensor.Y3 will be on and activate the agitator. Also timer T0 will start count for 60 sec. After60 sec T0 will be on and the agitator motor Y3 will stop working.Y2 will be on and latched and the mixture will drain out of the container
- When Y2=on the timer T1 will start count for 120 sec after 120 sec,T1 will be on and Y2 will be off .the draining process will be stopped.
- When the error occurs , the press emergency stop button X10 . The NC contact X10 will be on to disable all the outputs. The system will stop running.

Number of PLC input required

X1- start switch

X1-low level float sensor.X1=on when the liquid level reaches to 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

Number of PLC output required

Y0 - Liquid A in let

Y1 - Liquid B inlet

Y2 - Mixture Outlet

Y3 - Agitator/Stirrer

Number of PLC Timer Required

T0- 60 second Timer, 100 ms Time base. (See k60 present value for timer

T1- 120 second Timer, 100 ms Time Base. (see K1200 present value for Timer

