

Name : Havis Khan

ID : 13169

Assignment : Paper mid.

Subject : Industrial Electronics

Submitted To : Sir, Samuallah .

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Industrial Electronics.

Assignment.

Q#1 Answer:

- 1 → (a) Increase.
(b) Increase.
(c) decrease.
(d) decrease.

- 2 → (a) safety glasses.
(b) safety gloves, safety shoes,
safety hat.
(c) safety gloves, safety shoes,
and hat.

3 → (third) .

4 → Reducing.

5 → Transducer..



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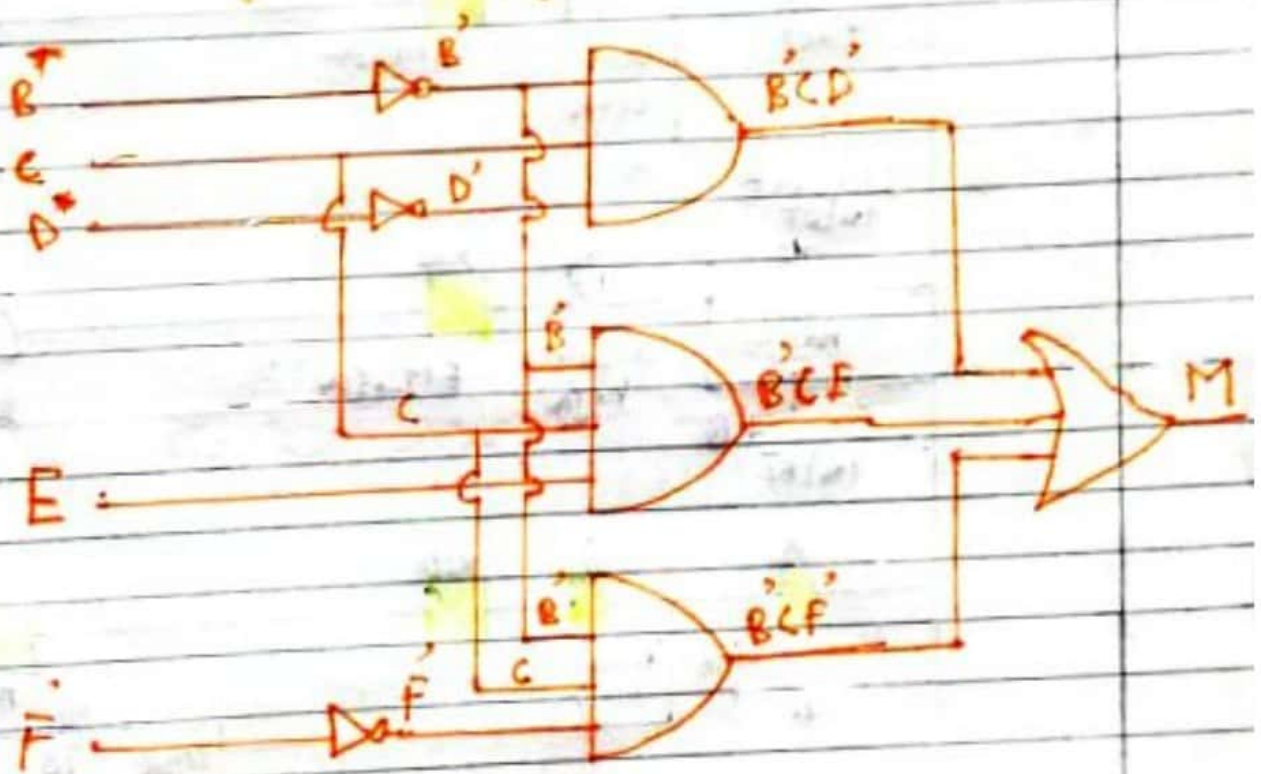
Assignment / Answer

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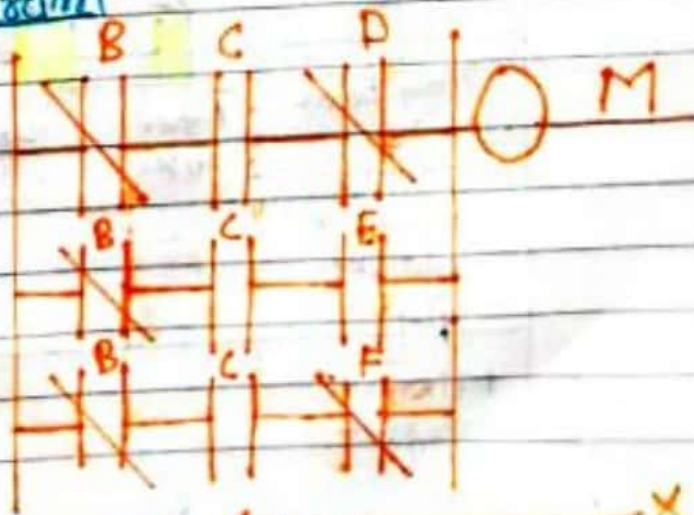
Q #2 Answer

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

⇒ Digital Logic Circuit



⇒ Ladder Diagram



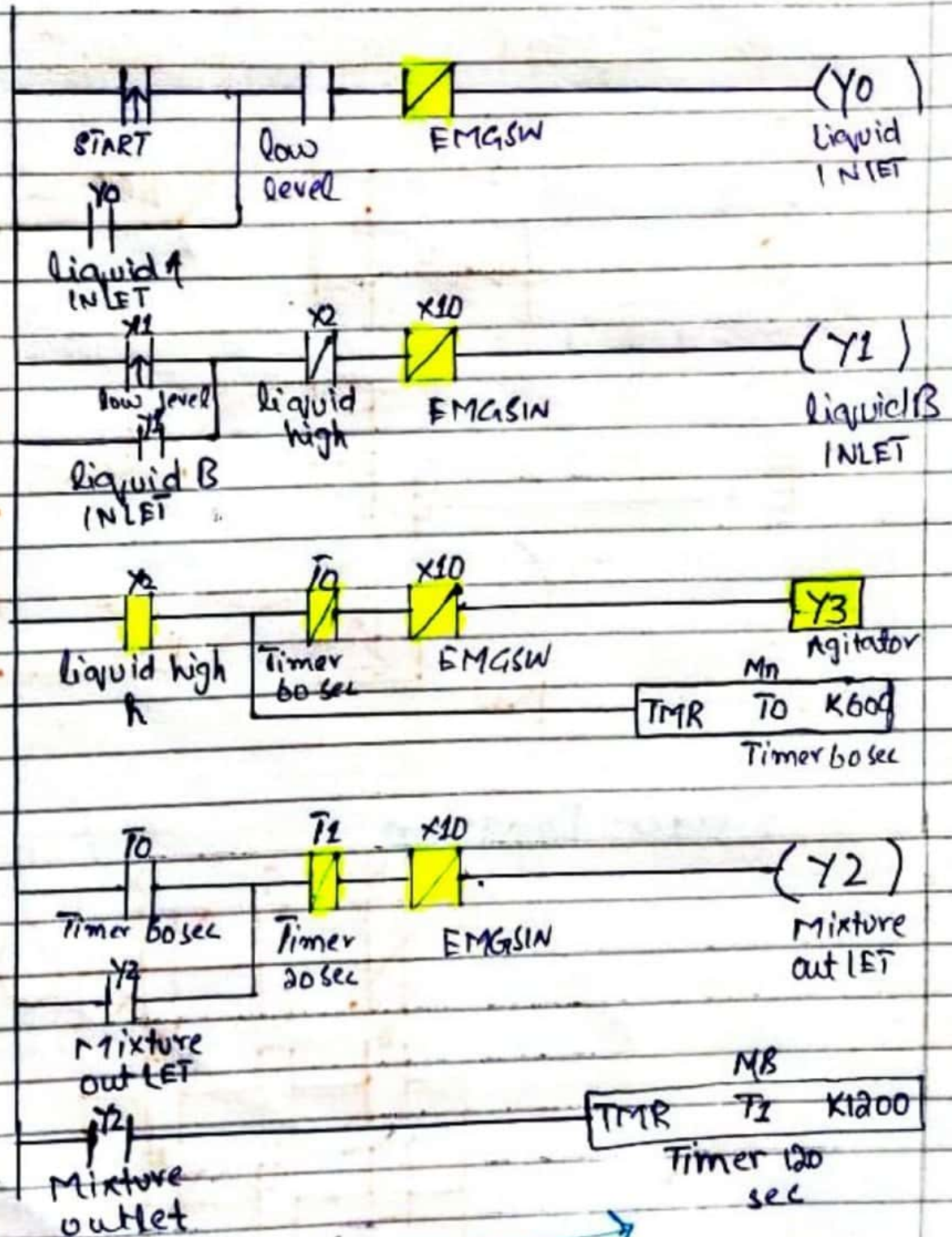
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Q# 3

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Answer:

⇒ Ladder diagram:



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Number of PLC Input Required :- Page 4

$\Rightarrow X_1$ - is start switch.

$\Rightarrow X_1$ - low level float sensor. $X_1 = ON$ when the liquid level reaches X_1 .

$\Rightarrow X_2$ - High level float sensor
 $X_2 = ON$ when the liquid level reaches X_2 .

$\Rightarrow X_3$ - Stop switch.

$\Rightarrow X_{10}$ - Emergency stop button.
 $X_{10} = ON$ when the button pressed.

Number of PLC Outputs Required:-

Y_0 - liquid A inlet.

Y_1 - liquid B inlet.

Y_2 - mixture outlet.

Y_3 - Agitator / stirrer.

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⇒ Number of PLC Timer Required: Pages

T0 - 60 second timer, 100ms Time Base.
(see K60 present value for timer)

T1 - 120 second timer, 100ms Time Base.
(see K1200 present val. for timer)

⇒ Ladder Program Description:

- X0 = ON when start is pressed. Y0 will be on and latched, and the valve 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 and latched, and the valve will be opened for infusing liquid B until the level reaches the high-level float sensor.

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- $X2 = ON$ when the level reaches the high-level float sensor. $Y3$ will be ON and activates the agitator. Also, timer $T0$ will start to count for 60 sec. After 60 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 $Y2 = ON$, timer $T1$ will start to count for 120 sec. After 120 sec, $T1$ will be ON and $Y2$ will be OFF. The draining process will be stopped.
- when an error occurs, press EMERGENCY STOP button $X10$. The NC contact $X10$ will be ON to disable all the outputs. The system will then stop running.

x ————— x ————— x .