Final Paper Page 1.
Industrial Electronics.

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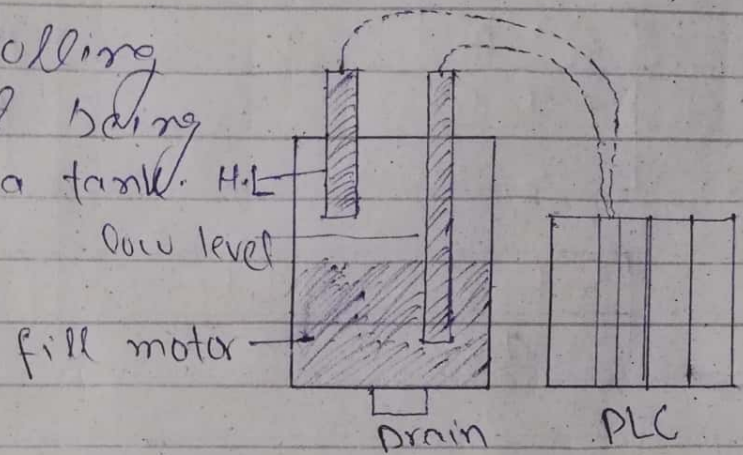
Q#1 Answer:

We are controlling lubricating oil being dispensed from a tank.



=> Dispensing oil from the tank.

This is possible by using two sensors, we put one near the bottom and one near the top, as shown in the figure/picture.

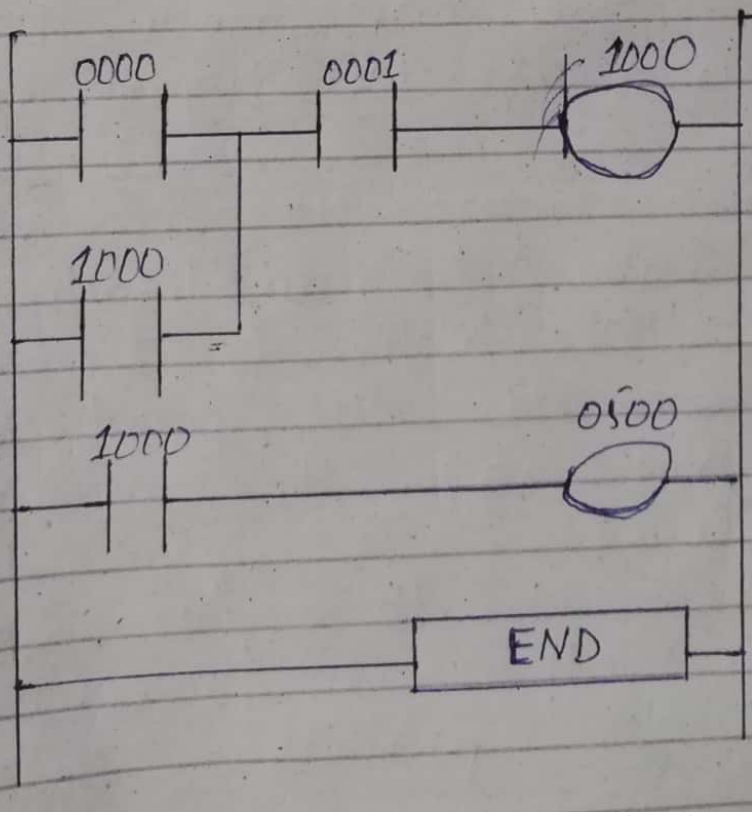
- Here, we want the fill motor to pump lubricating oil into the tank until the high level sensors turns on. At the point we want to turn off the motor until the level falls below the low level sensor, then we should turn on the fill motor and repeat the process.

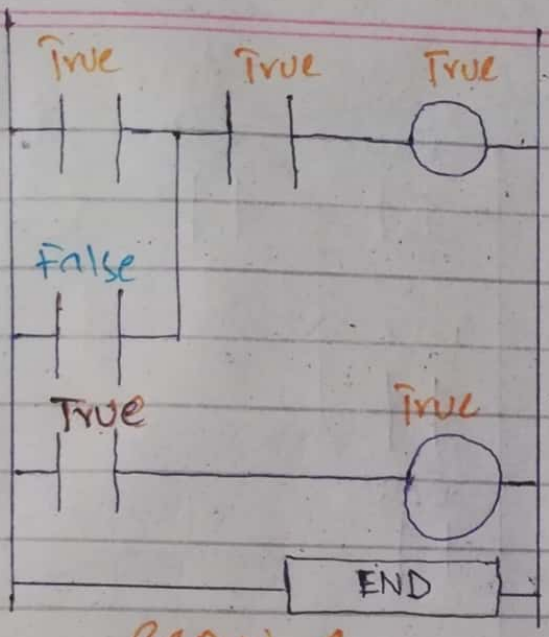
Inputs	Address
low level sensor	0000
High level sensor	0001.

Output	Address.
Motor	0500

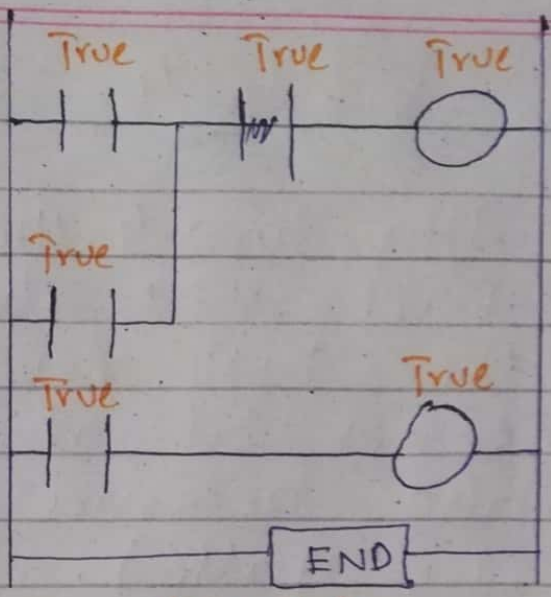
Internal Utility Relay
1000

The Ladder Digram:





SCAN 1.



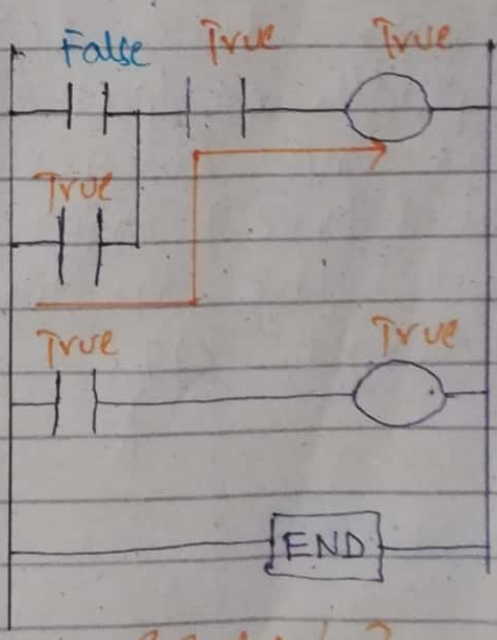
SCAN 2.

Initially the tank is empty. Therefore, input 0000 is TRUE and input 0001 is also TRUE.

The Internal relay is turned on as the water level rises.

⇒ SCAN 3

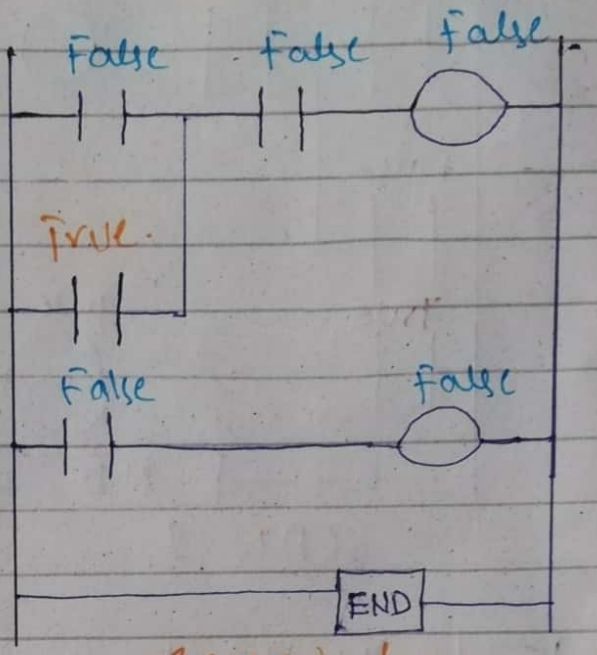
After Scan 2 the oil level rises above the low level sensor and it becomes open (i.e False).



SCAN 3

=> SCAN 4.

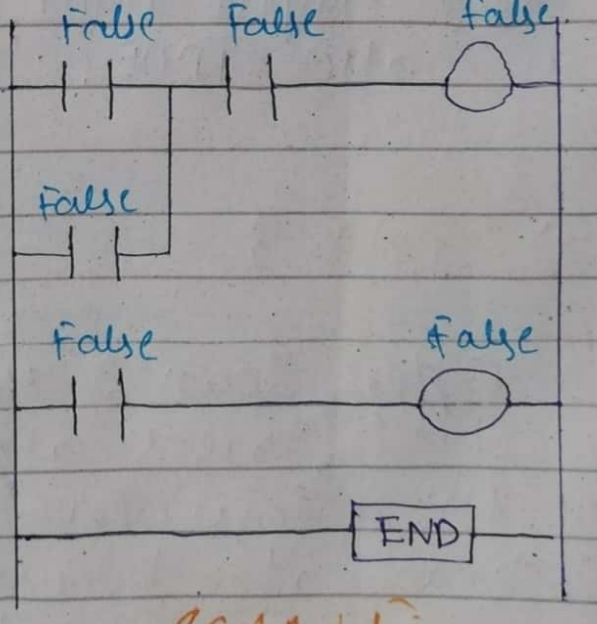
After scan 4 the oil level rises above the high level sensor cut it also becomes open (i.e false).



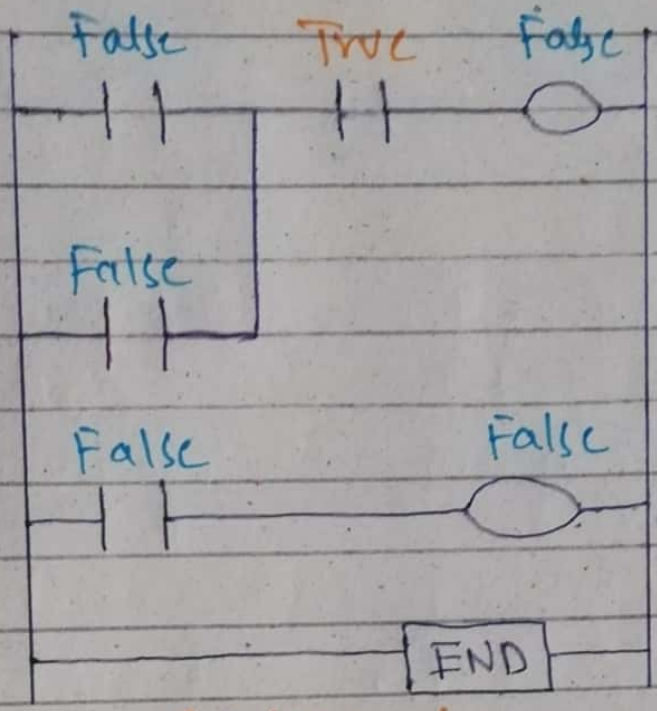
SCAN 4.

=> SCAN 5.

Since there is no more true logic path, output 500 is no longer energized (true) and therefore the motor turns off.



SCAN 5



SCAN 6.

=> After scan 6 the oil level falls below the high level sensor and it will become true again.

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Industrial Electronics.

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Q.2 (A)

Benefit of Industrial automation.

* **Increase productivity :-**

-> Increase productivity -> higher gained money.
=> more units/day and more money.

* **Product produce more efficiently and consistently:**

-> Increase consistency.
-> higher quality.
-> Increase consumer satisfication.

Example:-
A bottle soft drink such as coke or pepsi always taste the same and consumer

* **Product produce more reliably :-**

-> Robot can run 24 hours/day without getting tired or bored.

* **Decrease labor expenses :-**

-> Audomated system reduce the amount of people needed to produce the good.

* Increase Safety in working Condition:

Q#2 (b) Answer:

Components of the SCADA System:-

* Human machine Interface.
* Supervisory system.
* Programmable logic Controller.
* Communication infrastructure.
* SCADA programing.

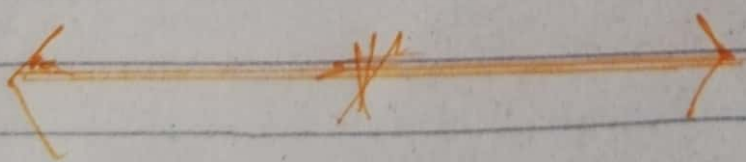
function of SCADA:-

* Centrally monitor and control thousands of industrial equipment such as motor, valves, pumps, relays, sensor etc.
* Display Current State of the remote process.
* Display alarms/Event log.

Q3 (A) SOL

Answer:

Hardware Control system	PLC system.
• The function are determined by the physical wiring.	• The function are determined by a program stored in the memory.
• Changes the function means changing the wiring.	• The control functions can be charged simply by changing the program.
• Can be Contact-making type (relay, Conductors) or electronic type (logic circuit).	• Consist of a control device to which all the sensors and actuators are connected.



Q3 (B)

Answer:

Function of SCADA:

=> Controlling monitor and control thousand of industrial equipment such as, motor, valves, pump, Relay, sensor etc.

=> Display Current state of remote process (visualization).

=> Display alarms / Event log.

THE End.