PLC 1 Final Practical Exam

Programming Guidelines:

Design a RSLogix 500 ladder logic program that will perform the functions described for each exercise. Adhere to the following guidelines:

- Use the provided/simulated pushbuttons, lamps, and other available I/O.
- Plan your input and output assignments before you start programming.
- **RUNG TITLES**: Place only one rung title on the top rung of your program. Make sure it is assigned to the rung and not the output. Place the name of the exercise here (e.g.: Logic Exercise 3, Motor Exercise 2, Counter Exercise 1, etc.). Do not place titles on remaining rungs as this will cause the start of a new page when printing.
- **RUNG COMMENTS**: In rung comment area, place your name then hit enter and add any comments related to the project. Add comments without titles to other rungs as needed to explain the intended function of that rung.
- **INSTRUCTION SYMBOLS**: Utilize instruction symbols that are given. If there are none noted, please create your own. [E.g.: SW3, LP2, LS7, CR4, etc.]
- **INSTRUCTION DESCRIPTIONS**: Insert instruction descriptions whenever possible. [E.g.: "capacitive sensor", Conveyor Limit Switch, Motor Control Relay, Master Control Relay, etc.]
- **Save and verify** your program before downloading! Then download your program to the PLC trainer and test to see that it works as intended.

Program Name: PLC 1 Final Exam
Name your Program "**PLC 1 Final Exam**". *Do Not include the Quotes*

Functional Specification:

For the practical final you are to create a program to control AnyTown Wisconsin's drinking water wells. The program will need to meet the following requirements:

- AnyTown Wisconsin needs a PLC program to control its two drinking wells.
- The well's two pumps fill a central water tower.
- There is a Master enable switch that will disable the pumps if it is opened.
- Each of the well pumps are controlled by a separate motor starter with a monitored overload that will stop the pump and open if the pump is overloaded.
- The water tower has a High level float switch and a Low level float switch. When the water level falls below the low limit switch the switch closes to initiate filling of the tower.
- When the water level exceeds the High level switch the switch opens to stop the filling of the tower.
- Only one running pump is needed to meet the water demands of the city and fill the tower.
- For each of the pumps the city would like the PLC to track the pumps total run time in hours and seconds, and number of times the pump started.

- Using this information, the PLC should always pick the pump with the least amount of runtime to fill the tower.
- If while filling the tower the pump overload trips, the PLC should start the next pump.
- A Pump Fault warning light should flash anytime either motor starter has tripped on overload.
- Follow the **Programming Guidelines** above. Make sure to follow the guidelines with respect to Symbols, Rung Titles and Comments, and instruction Descriptions.
- Once you have the program tested and is working to the specifications, show the program operation to your instructor and submit to blackboard.

Type of Device Description	Address
Pump Station Enable	I:0/8
Water Tank High Level Switch	I:0/0
Water Tank Low Level Switch	I:0/1
Pump 1 Overload	I:0/2
Pump 2 Overload	I:0/3
Pump 1 Starter Coil	O:1/0
Pump 2 Starter Coil	O:1/1
Pump Failure Alarm	O:1/2