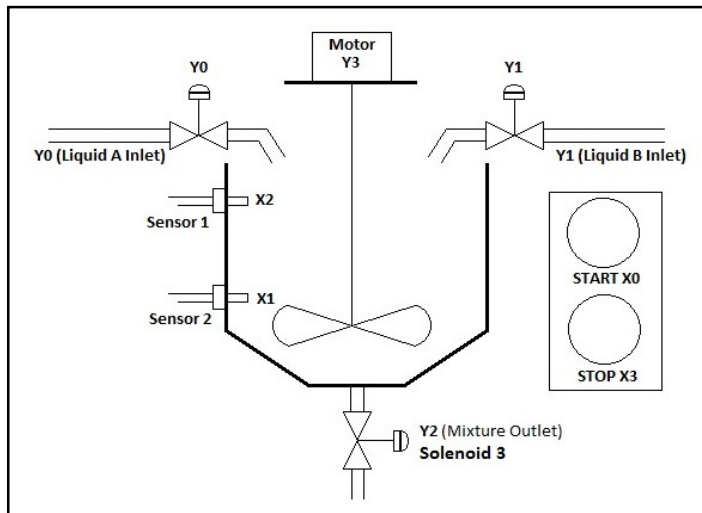


Group – E

8. (a) What are the differences between microprocessor and microcontroller?
 (b) Write down all addressing modes of microcontroller 8051, explain with example.
- 6 + 6 = 12**
9. (a) What is PLC? Explain its advantages over microcontroller based control?
 (b) A mixer mixes two liquids by automatically filling a tank with liquids A (up to X1) and B (X1 to X2) in order when START is pressed. A mixer motor is used to stir the liquids automatically in the tank for 30 seconds when the level of liquids in the tank is filled up to a certain level (X2). After stirring, the tank is emptied by opening the solenoid valve 3 for 5 mins. Draw ladder logic for the above system.



(2 + 2) + 8 = 12

**MECHATRONICS
(MECH 3252)**

Time Allotted : 3 hrs

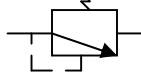
Full Marks : 70

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

**Group – A
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) A 4/3 direction control valve has
 (a) 4 ports 3 position (b) 3 ports 4 position
 (c) 3 ports 3 position (d) none of these.
- (ii) The shown symbol represents

 (a) check valve (b) DC valve
 (c) pressure relief valve (d) flow control valve.
- (iii) A circuit whose output is proportional to the difference between the input signal is called
 (a) common mode (b) differentiator
 (c) differential (d) integrator.
- (iv) If non-inverting terminal of an OP-AMP is grounded then the inverting terminal will
 (a) not need an input resistor (b) be virtual ground
 (c) have high reverse current (d) not invert the signal.
- (v) An ideal OP-AMP has
 (a) zero open loop gain (b) infinite open loop gain
 (c) zero input impedance (d) infinite output impedance.
- (vi) What logic gate is the sum output of a half adder?
 (a) AND (b) EX OR
 (c) EX NOR (d) NAND.
- (vii) Which among the following is not an advantage of an open loop system?
 (a) Simplicity in construction & design
 (b) Easy maintenance
 (c) Rare problems of stability
 (d) Requirement of system recalibration from time to time.