Total No. of Questions – [03]

Total No. of Printed Pages: [02]

PRN No.	

Paper Code	V223-261 (ESE)

MAY 2023 ENDSEM EXAM

S.Y. B. TECH.(MECHANICAL) (SEMESTER - II)

COURSE NAME: INSTRUMENTATION AND CONTROL

COURSE CODE: MEUA22201

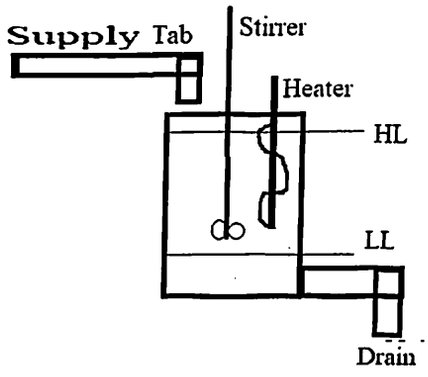
(PATTERN 2020)

Time: [1 Hr] [Max. Marks: 30]

Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **'a' part of every question is compulsory**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Question No.	Question Description	Marks	CO mapped	Blooms Taxonomy Level
Q.1	a) Explain different buses of communication channel?	[4]	[4]	[2]
	b) Build the ladder logic for a simple traffic light controller for following sequence of operation, Step 1 : Turn Green on for 25 seconds Step 2 : Turn Yellow on for 7 seconds. Step 3 : Red on for 30 seconds. Step 4 : Sequence repeats thereafter.	[6]	[4]	[3]
	OR			
	c) Build the ladder diagram for Switch 'ON' supply Tab to fill the tank till 'HL". At 'HL' Supply Tab will Off and Heater and Stirrer will start for 5 min. After 5 min Heater and stirrer will off and Drain Valve will ON till "LL' and followed by repeat the same cycle	[6]	[4]	[3]

				
	a) Define the following terms in time domain analysis 1) Settling time? 2) Delay time? b) Relationship of PID controller in series with its out- put explain with suitable Diagram. **OR** c) Compare the derivation for proportional and derivative Controller draw the diagram showing action of this controller.	[4] [6] [6]	[5] [5] [5]	[1] [4] [4]
Q.3	a) Compare Hydraulic and Pneumatic system, b) Examine the Damping of system by solving $s^2 + 8s + 12 = 0$ and tell about the value of Damping factor, natural frequency, settling time **OR** c) Examine the stability of the system by solving the array with Routh–Hurwitz stability criteria $3S^4+5S^3+10S^2+6S+12=0$ and state about stability of system	[4] [6] [6]	[6] [6] [6]	[2] [4] [4]