GIET UNIVERSITY, GUNUPUR – 765022
M. Tech. (Third Semester) Examinations, December – 2022
MPEMD3022 – Mechatronics
(Machine Design)

Time: 3 hrs   Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A		(2 x 10 = 20 Marks)

Q.1. Answer ALL questions	CO#	Blooms Level
a. Enlist any four applications of mechatronic system in Household.	CO3	K1
b. What is meant by system in mechatronics?	CO3	K1
c. Mention types of strain gauges?	CO3	K1
d. Define aliasing.	CO2	K2
e. What is the basics of PLC ?	CO1	K2
f. Why do we need data acquisition system?	CO2	K1
g. What is mean by sensitivity?	CO3	K2
h. What is a block diagram?	CO1	K1
i. Mention the advantages of integral control?	CO4	K2
j. State the purpose of control system?	CO4	K1

PART – B		(10 x 5 = 50 Marks)

Answer *ANY FIVE* questions

		Marks	CO#	Blooms Level
2. a.	Differentiate between sensors, transducer and actuators	3	CO3	K1
b.	List various types of position sensors and draw setup and explain the working principle of the POSITION sensor.	7	CO3	K2
3. a.	Explain in brief about the parameters on which selections of sensors is depend.	5	CO1	K2
b.	Differentiate between stepper motor and servo motor.	5	CO3	K1
4. a.	What is Aliasing, explain with neat diagram. How to rectify Aliasing effect?	4	CO2	K1
b.	Draw Ladder diagram along and state no of inputs and outputs for following process	6	CO1	K2
	For 2 motors operation, When start button is pushed motor M1 and M2 starts .After 10 seconds motor. M1 stops Motor M2 stops 15 seconds after motor M1 has stopped. Both M1 and M2 will stop when push button is pressed.			
5.	Draw Ladder diagram along and state no of inputs and outputs for following process.	10	CO1	K3
	Three motors can be started automatically in sequence .Start push button run motors M1 and M2 and M3 . Stop push button off the motors M1 first , motor M2 after 10 sec and motor M 3 after 20 sec.			
6. a.	Distinguish between synchronous and asynchronous data transmission.	5	CO2	K1
b.	Draw the signal flow path for DAS. List out the elements of DAS.	5	CO2	K2
7. a.	Find the transfer function of following control system as shown in figure using block diagram reduction principles.	10	CO4	K3
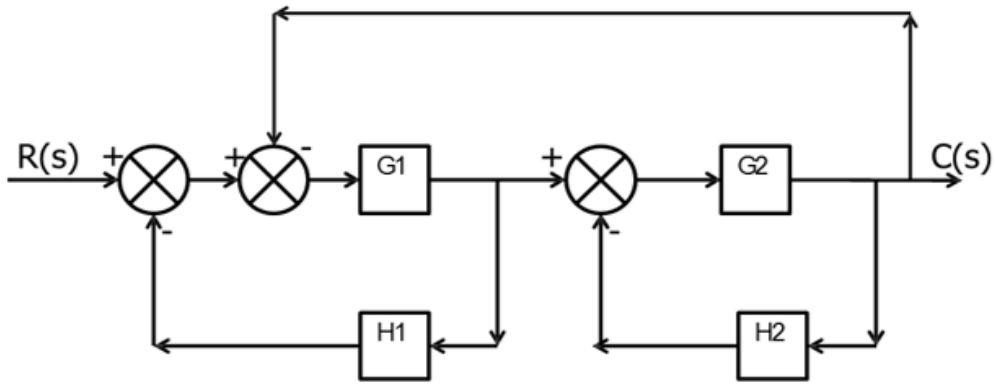
8. Sketch the basic architecture of a PLC and explain the function of each element.   10   CO4   K2

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