Reg.No:							

SNS College of Technology, Coimbatore-35.
(Autonomous)
B.E/B.Tech- Internal Assessment Exam-I
Academic Year 2022-2023(Odd)
Fifth Semester
Electrical and Electronics Engineering
19EEB301 & Control Systems

A

Time: 1 ½ Hours **Maximum Marks: 50**

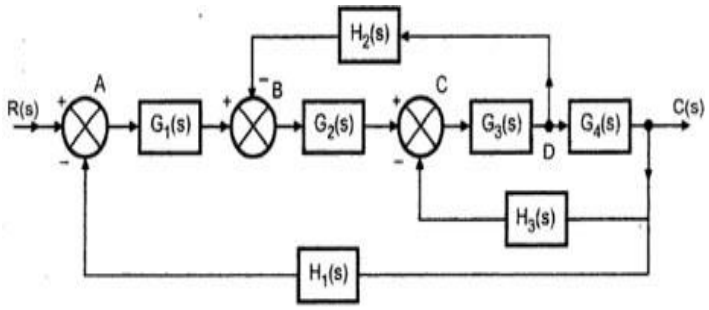
Answer All Questions

PART - A (5 x 2 = 10 Marks)

1.	Show the elements of a closed loop control system.	CO1	REM
2.	Name the analogous electrical elements in force-voltage analogy for the elements of mechanical translational system.	CO1	REM
3.	List out the characteristics of negative feedback?	CO1	UND
4.	Tell about Damping ratio.	CO2	REM
5.	Classify the test signals used in control system.	CO2	UND

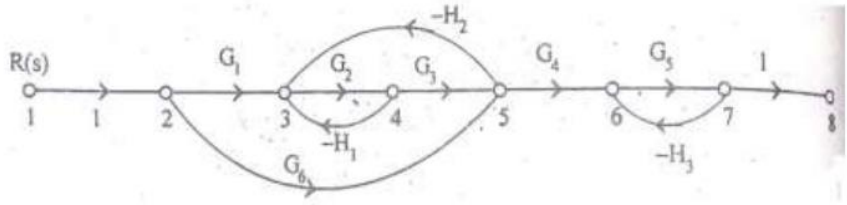
PART – B (13 x 2 = 26 Marks)

6.	(a)	Reduce the block diagram shown in figure below and estimate the transfer function.	13	CO1	APP



OR

	(b)	Use Mason's gain formula for determining the overall T.F. of the system shown.	13	CO1	APP



7.	(a)	Summarize the time response of a typical under damped second order system for a unit step input.	13	CO2	REM

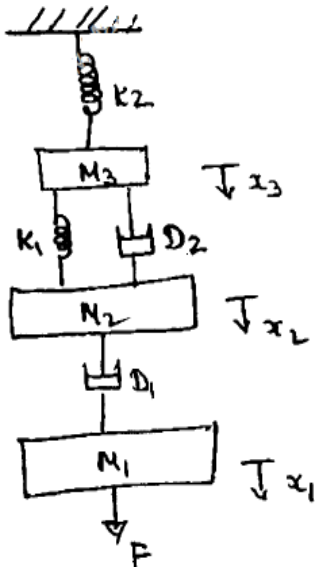
OR

(b) Formulate all the time domain specifications for a unity feedback control system whose open loop transfer function is given by 13 CO2 UND

$$G(S) = \frac{25}{S(S+5)}$$

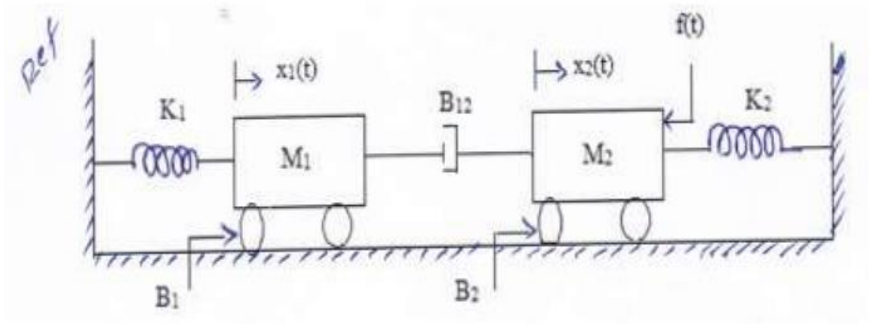
PART – C (14 x 1 = 14 Marks)

8. (a) Relate the differential equation for the mechanical system shown in fig below and find the force-voltage analogous and force-current analogous. 14 CO1 UND



OR

(b) Develop the differential equation for the given mechanical system as shown in fig and derive its transfer function and also draw the electrical equivalent analogous system 14 CO1 APP



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REM-Remembering, UND-Understanding, APP-Applying, CRE-Creating

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Electrical and Electronics Engineering
19EEB301 & Control Systems

B

Time: 1 ½ Hours **Maximum Marks: 50**

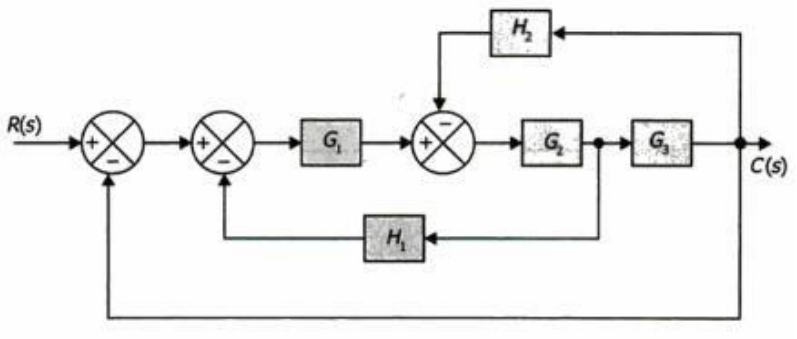
Answer All Questions

PART - A (5 x 2 = 10 Marks)

1.	Explain Masons Gain formula.	CO1	UND
2.	Name the analogous electrical elements in force-current analogy for the elements of mechanical translational system.	CO1	REM
3.	Summarize about Servomotors.	CO1	UND
4.	How a control system is classified depending on the value of damping?	CO2	REM
5.	Compare transient response and steady state response of a control system.	CO2	REM

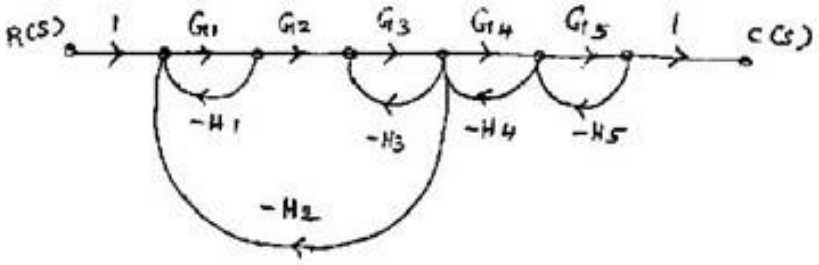
PART – B (13 x 2 = 26 Marks)

6.	(a)	Reduce the block diagram shown in figure below and estimate the transfer function.	13	CO1	APP



OR

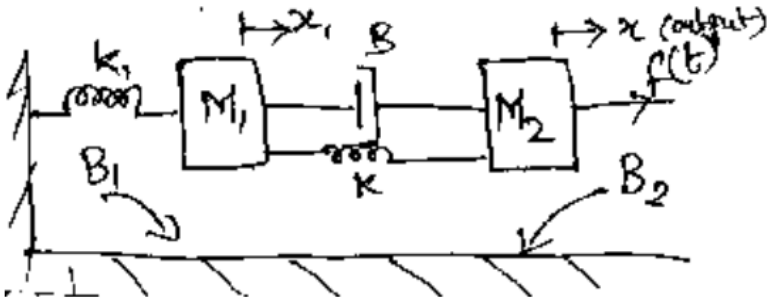
	(b)	Use Mason's gain formula for determining the overall T.F. of the system shown.	13	CO1	APP



7.	(a)	Summarize the time response of a typical under damped second order system for a unit step input.	13	CO2	REM
		OR			
	(b)	A unity feedback control system has an open loop transfer function, G(s) = $\frac{10}{S(S+2)}$. Find the rise time, percentage overshoot, peak time and settling time with 2% criterion.	13	CO2	UND

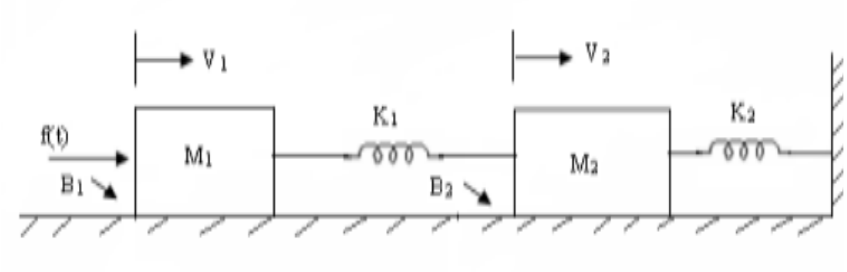
PART – C (14 x 1 = 14 Marks)

8.	(a)	Relate the differential equation for the mechanical system shown in fig below and find the force-voltage analogous and force-current analogous.	14	CO1	UND



OR

	(b)	Develop the differential equation for the given mechanical system as shown in fig and derive its transfer function and also draw the electrical equivalent analogous system	14	CO1	APP



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REM-Remembering, UND-Understanding, APP-Applying, CRE-Creating

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