R20

Code No: R20A0205

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

II B.Tech I Semester Supplementary Examinations, July/August 2023

Control Systems

(EEE & ECE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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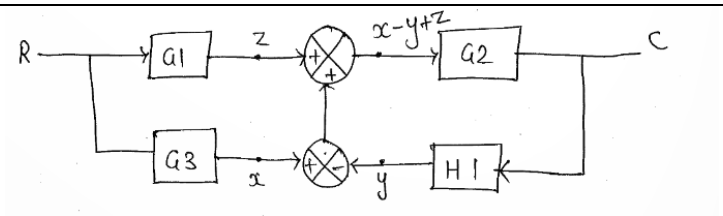
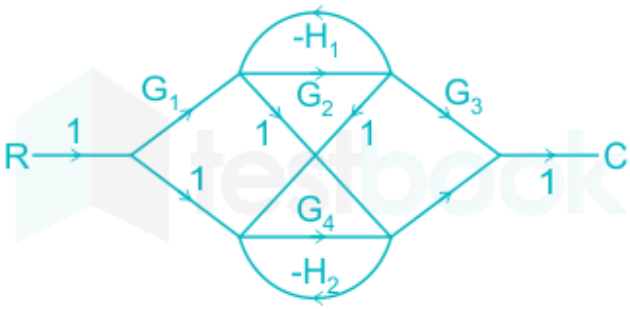
		SECTION-I	
1	***A***	What is feedback ? What type of feedback is employed in control systems? Define transfer function?	**[7M]**
	B	 Find the overall transfer function of the above block diagram?	**[7M]**
		OR	
2	***A***	Explain open loop & closed loop control systems by giving suitable Examples & also high lights their merits &demerits.	**[7M]**
	B	 Consider the signal flow graph shown above, Assume that A is the number of forward paths B is the number of feedback loops, c is the number of touching loops, Arrange A,B and C in decreasing order?	**[7M]**
		SECTION-II	
3	***A***	Find the response of unity feedback second order system for unit step input?	**[7M]**
	B	Find the type and order of the system G(S)=40/S(s+2)(s+3)(s+4) ?	**[7M]**
		OR	
4	***A***	What are the advantages and disadvantages of proportional, proportional	**[7M]**

		derivative, proportional integral control systems?	
	B	Find the response of a system with g(s)=100/s(s+2) and H(s)=0.1s+1whentheinputappliedisunitstep?	**[7M]**
		SECTION-III	
5	***A***	Using the Routh's criterion determine the stability of the system representedbycharacteristicequations^4+8s^3+18s^2+16s+5=0	**[7M]**
	B	Define marginal stability , conditional stability and Critically stable system.	**[7M]**
		OR	
6	***A***	Locate the poles and zeros on the S-plane of a system G(s)=13(s+7)(s+9) / (s^2+5s+8)	**[7M]**
	B	Sketch the root locus of the unity feedback system whose open loop transfer function is G(s)=k/s(s+4)(s^2+4S+20).	**[7M]**
		SECTION-IV	
7	***A***	Draw the Bode plot for G(s)=(1+sT).	**[7M]**
	B	Explain the frequency domain specifications.	**[7M]**
		OR	
8	***A***	Given **ξ=0.7**and**ωn=10rad/sec.** Calculate resonant peak, resonant frequency and bandwidth.	**[7M]**
	B	Explain the steps for the construction of Bode plot?	**[7M]**
		SECTION-V	
9	***A***	ObtainthestatemodelofthesystemdescribedbyT(s)=Y(s)/U(s)=5/(s^3+6s+7)	**[7M]**
	B	Write state model approach? Give two advantages?	**[7M]**
		OR	
10	***A***	Obtain the STM for the state model whose matrix A is given by A=[11;01]2x2	**[7M]**
	B	Draw the Block diagram representation of state model of the system.	**[7M]**
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