BUE402

Model Question Paper-[redacted]2 with effect from 2022-23 (CBCS Scheme)

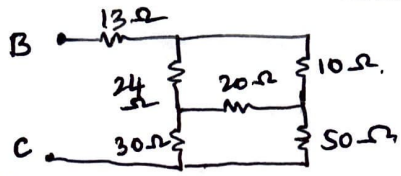
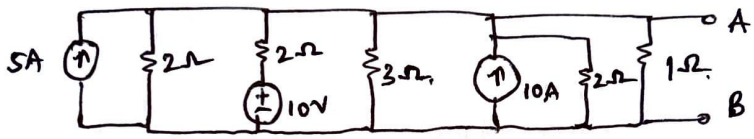
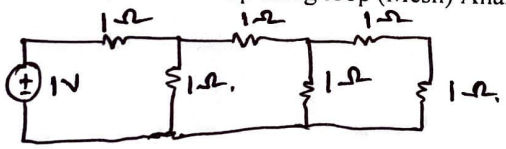
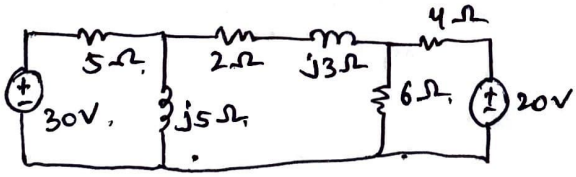
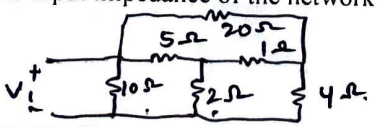
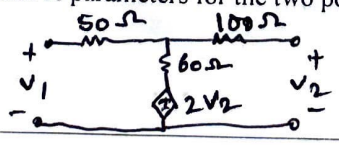
USN | | | | | | | | | | |

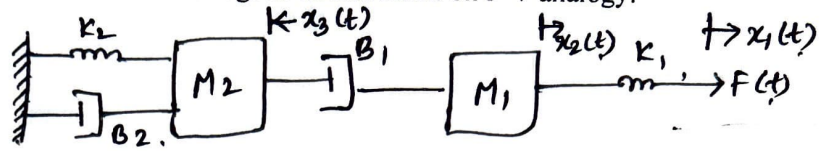
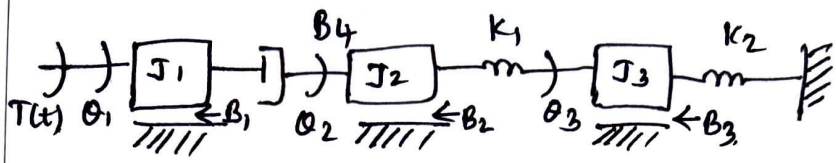
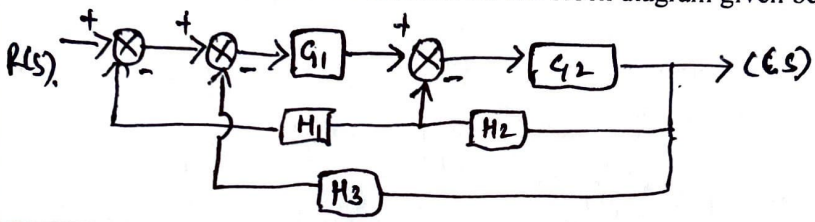
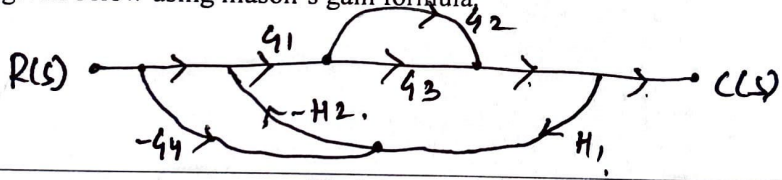
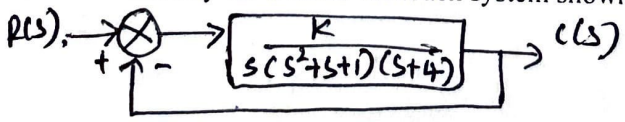
Fourth Semester B.E. Degree Examination

Network Analysis and Control Systems

TIME: 03 Hours **Max. Marks: 100**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	M	L	C
Q.01	a	Find the equivalent resistance between b & c for the circuit using Star delta transformation 	10	L3	CO1
	b	Reduce the network given below into a single current source with resistance in parallel using source transformation. 	10	L2	CO1
		OR			
Q.02	a	Determine the current in each loop using loop (Mesh) Analysis. 	8	L3	CO1
	b	Find the current I using Superposition theorem. 	8	L3	CO1
	c	State and prove Nortons theorem.	4	L2	CO1
		Module-2			
Q. 03	a	Find the input impedance of the network shown in figure 	10	L2	CO2
	b	Find Z, Y and H parameters for the two port network. 	10	L2	CO2

		OR			
Q.04	a	Find L[t^2 f(t)] using the relation L[t f(t)]= -d/ds F(s)	8	L2	CO2
	b	State and prove Final value theorem.	6	L2	CO2
	c	Find $L^{-1}[s+4/2s^2+5s+3]$	6	L2	CO2
		Module-3			
Q. 05	a	Write a short note on open loop and closed loop control systems.	4	L3	CO3
	b	Write the differential equations for the mechanical system shown in figure and also electrical analogous circuit based on F-V analogy. 	8	L3	CO3
	c	Write the differential equations for the Rotational system shown in figure and also electrical analogous circuit based on T-V analogy. 	8	L3	CO3
		OR			
Q. 06	a	Determine the overall transfer function for the block diagram given below 	10	L3	CO3
	b	Find the overall transfer function for the system whose signal flow graph is given below using mason's gain formula. 	10	L3	CO3
		Module-4			
Q. 07	a	Define step signal, ramp signal, parabolic signal and impulse signal.	8	L4	CO4
	b	Explain the time response analysis of second order systems.	12	L4	CO4
		OR			
Q. 08	a	Explain the necessary and sufficient conditions for stability.	4	L4	CO4
	b	Examine the stability of a system with characteristic equation using routh stability criteria $s^4+8s^3+18s^2+16s+5=0$	6	L4	CO4
	c	Determine the stability for a linear feedback system shown in figure. 	10	L4	CO4
		Module-5			
Q. 09	a	Draw the root locus for the feedback system with characteristic equation. G(S)H(S)=k/s(s+5)(s+10) and comment on stability.	12	L5	CO5
	b	Sketch the nyquist plot and determine the stability of the open loop transfer function G(S)H(S)=10/s(s+1)(s+2).	8	L5	CO5
		OR			
Q. 10	a	Explain the steps involved in construction of Bode plots.	6	L5	CO5
	b	Draw the bode plot for the feedback system whose transfer function is G(S)=k(s+8)/(s+5)(s+10)	14	L5	CO5