10/12/22

K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)
End Semester Exam
Nov – Dec 2022
(B. Tech) Program: Electronics and Telecommunication Engineering
Examination: SY Semester: III
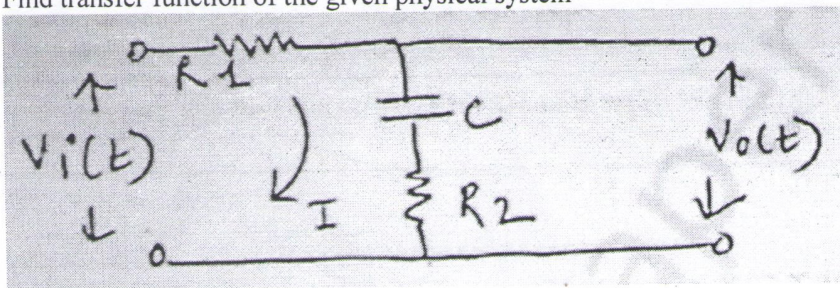Course Code: **EXC304** and Course Name: **Electronic Instrumentation & Control Systems**

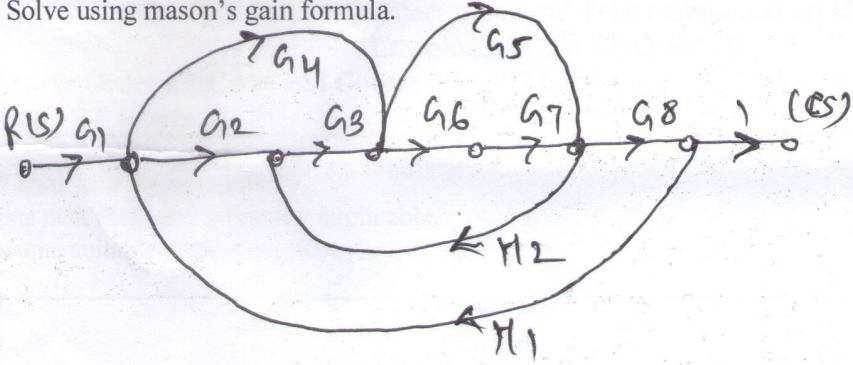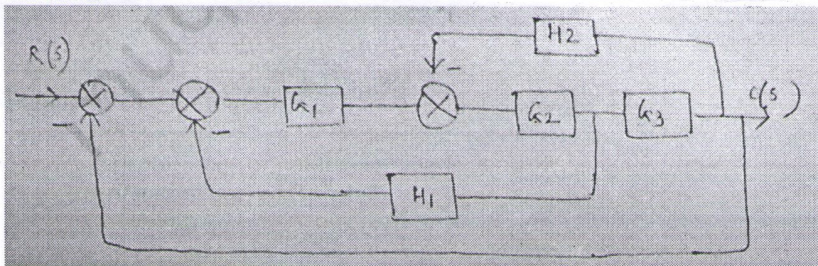Duration: 2.5 Hours   Max. Marks: 60

Instructions:
(1)All questions are compulsory.
(2)Draw neat diagrams wherever applicable.
(3)Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	12		
i)	What is Hysteresis?	2	1	U
ii)	Explain active transducer with example.	2	2	U
iii)	Explain advantages of open loop system.	2	3	U
iv)	Write advantages of the routh Criterion.	2	4	U
v)	Explain Gain crossover frequency.	2	5	U
vi)	What is phase margin?	2	6	U
vii)	Write selection criteria of transducers.	2	2	U
viii)	Write classification of errors in measurement system.	2	1	U
Q.2	**Solve any four questions out of six.**	16		
i)	Define accuracy, precision, linearity and sensitivity.	4	1	U
ii)	Write note on potentiometer transducer.	4	2	U
iii)	Find transfer function of the given physical system	4	3	A

iv)	Write steps to draw root locus.	4	5	U
v)	Check whether the system is stable or not $S^6+3s^5+2s^4+9s^3+5s^2+12s+20=0$	4	4	A
vi)	Solve using mason's gain formula.	4	3.	U
Q.3	**Solve any two questions out of three.**	**16**		
i)	Explain measurement of inductance using Maxwell bridge.	8	1	U
ii)	Sketch the root locus of a unity feedback control system with : $$G(s) = \frac{K}{S(S+5)(S+3)}$$	8	5	A
iii)	Find the range of K to make the unit of feedback system stable using Routh's criterion G(S) = K (S+20) / S(S+2)(S+3).	8	4	A
Q.4	**Solve any two questions out of three.**	**16**		
i)	Explain the principle, working and construction of LVDT.	8	2	U
ii)	Using Block diagram reduction techniques, find closed loop transfer function.	8	3	A
iii)	Draw the bode plot for a system having G(S)= 100 / S(1+0.5S)(1+0.1S), H(S) =1	8	6	A

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