SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

AN AUTONOMOUS INSTITUTION

Accredited by NAAC – UGC with 'A' Grade

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23EET206 CONTROL SYSTEMS AND INSTRUMENTATION

QUESTION BANK

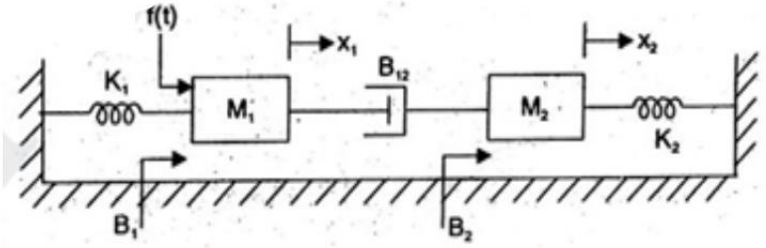
UNIT – I CONTROL SYSTEM MODELING

PART – A (2 MARKS)

1. What is control system?
2. What are the two major types of control systems?
3. Define open loop and closed loop systems.
4. Distinguish between open loop and closed loop systems.
5. What are the advantages of closed loop control system?
6. What is feedback? What type of feedback is employed in control system?
7. What is called feedback control system? Give an example.
8. Why negative feedback is preferred in control systems?
9. Write Mason's gain formula.
10. Define transfer function.
11. Write force balance equation of ideal spring, ideal mass.
12. Name the two types of electrical analogous for mechanical system.
13. Write the analogous electrical elements in torque-voltage analogy for the elements of mechanical rotational system.
14. What is signal flow graph?
15. Define non-touching loop.
16. List the properties of signal flow graph.

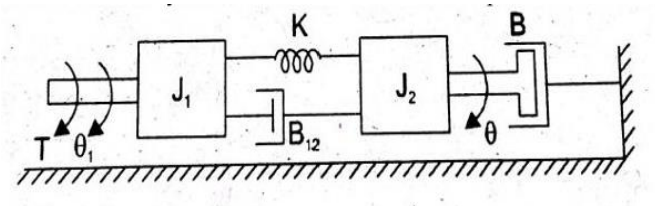
PART-B

1. For the given translational mechanical system, write the differential equations and find the transfer function.

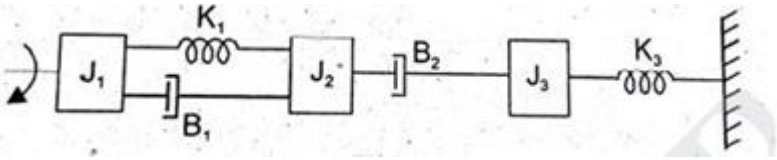


2. For the given rotational mechanical system, write the differential equations and find the transfer

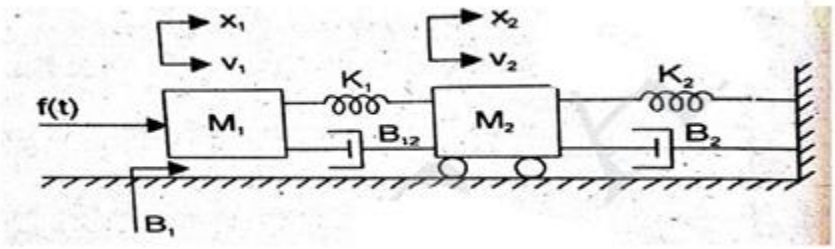
function.



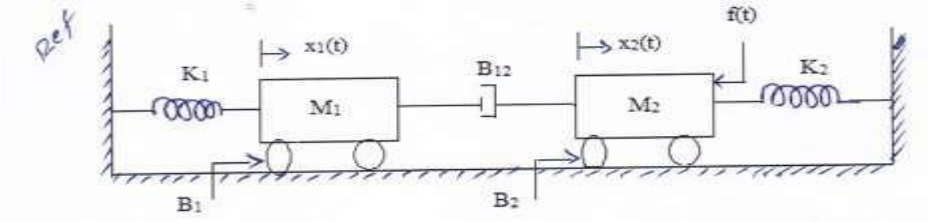
3. Write the differential equations governing the mechanical rotational systems. Draw the torque – voltage and torque – current electrical analogous circuits.



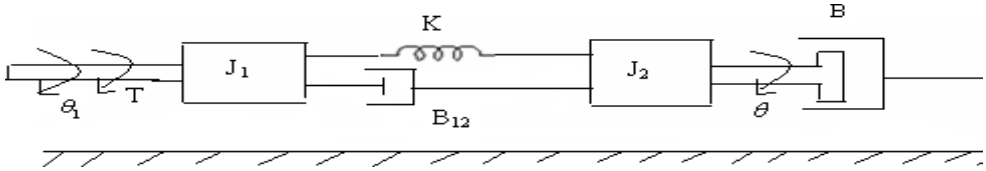
4. Write the differential equations governing the mechanical rotational systems. Draw the force – voltage and force – current electrical analogous circuits.



5. For the mechanical system shown in below figure, determine the transfer function.

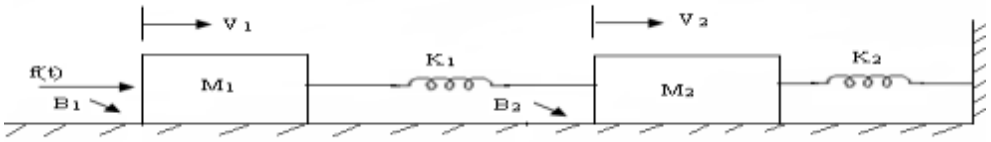


6. Write the differential equations governing the mechanical rotational system shown in the figure and find transfer function.

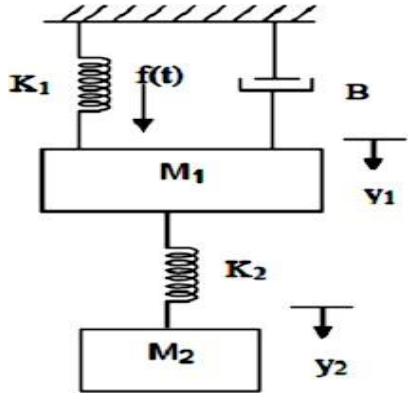


7. For the mechanical system shown in the figure draw the force-voltage and force-current

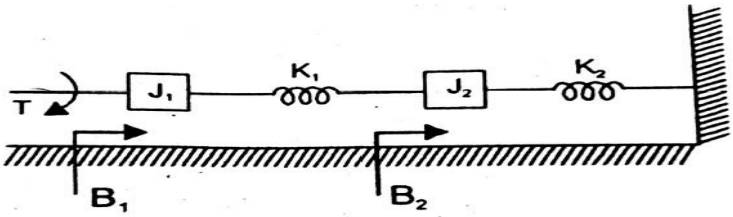
analogous circuits.



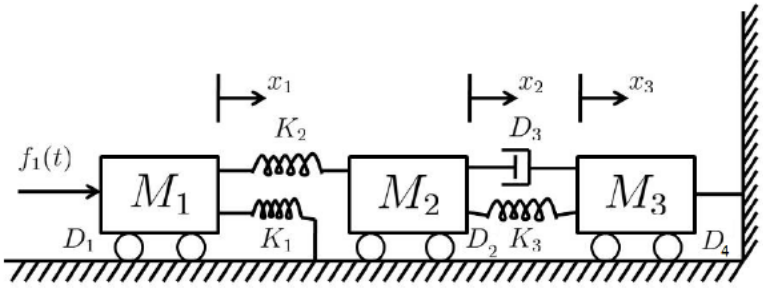
8. For the given translational mechanical system, write the differential equations and find the transfer function.



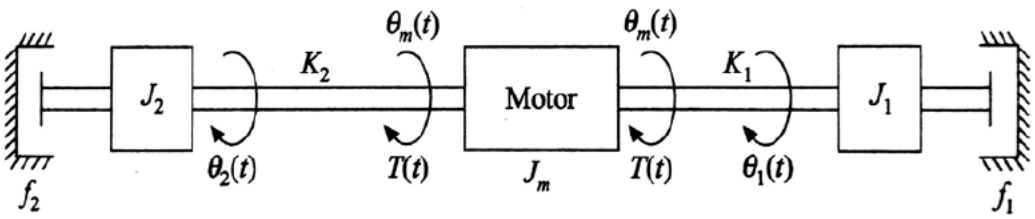
9. For the given rotational mechanical system, write the differential equations and find the transfer function.



10. Write the differential equations governing the mechanical rotational system shown in the figure and find transfer function.

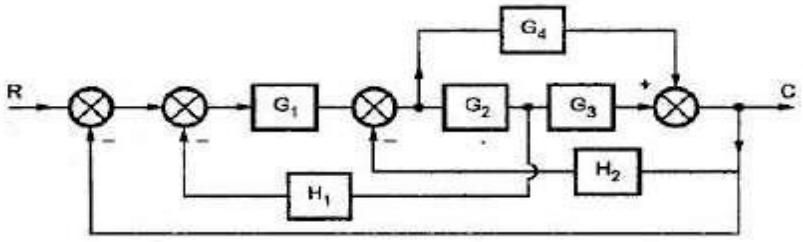


11. For the mechanical system shown in the figure draw the Torque-voltage and Torque-current analogous circuits.

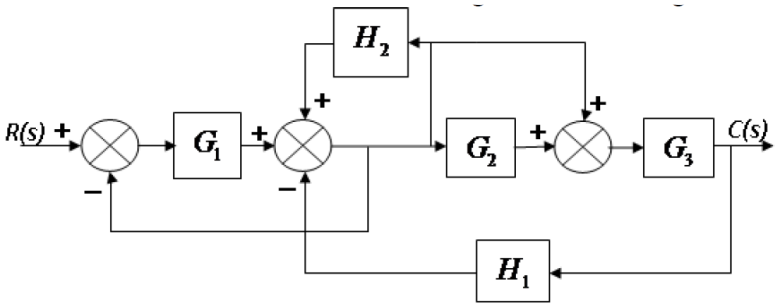


12. Using the block diagram reduction, determine the transfer function of the given system shown

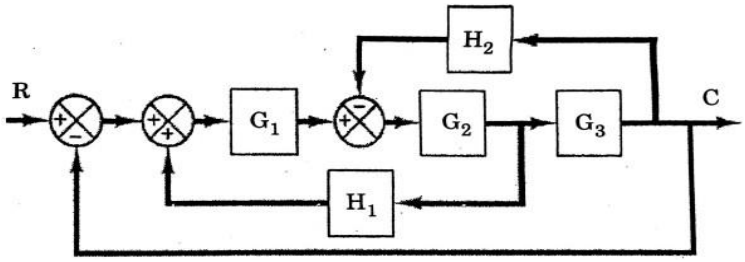
in the figure.



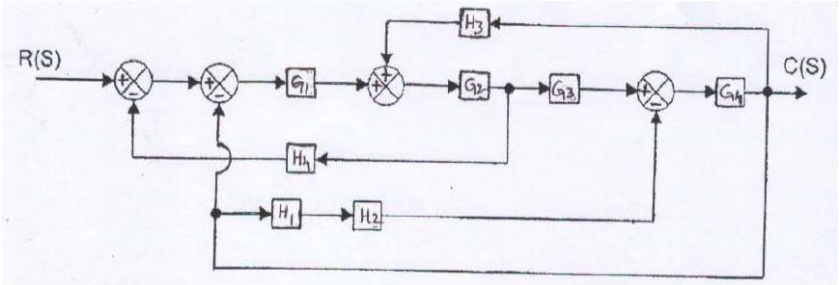
13. For the system represented in the given figure, determine transfer function C(S)/R(S).



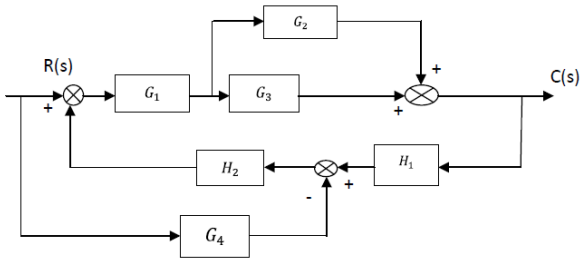
14. Using the block diagram reduction, determine the transfer function of the given system shown in the figure.



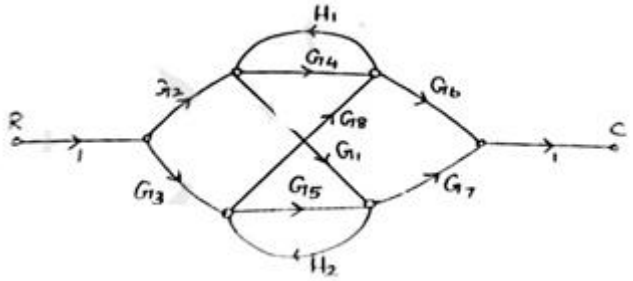
15. Using the block diagram reduction, determine the transfer function of the given system shown in the figure.



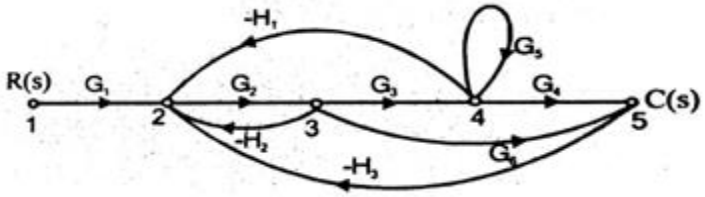
16. Using the block diagram reduction, determine the transfer function of the given system shown in the figure.



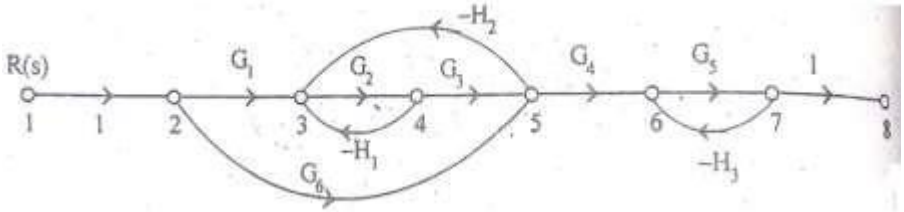
17. Obtain the transfer function of the system using maison gain rule.



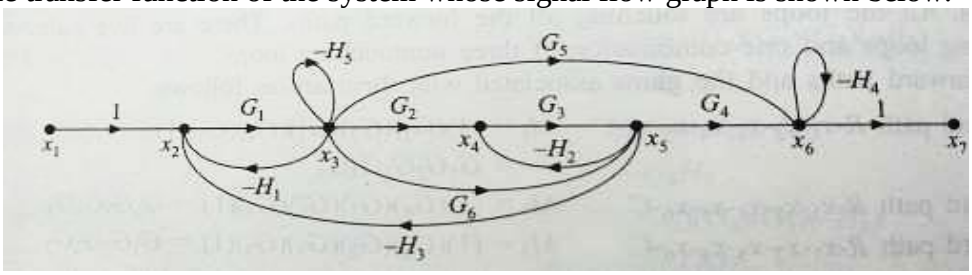
18. Obtain the transfer function of the system using maison gain rule.



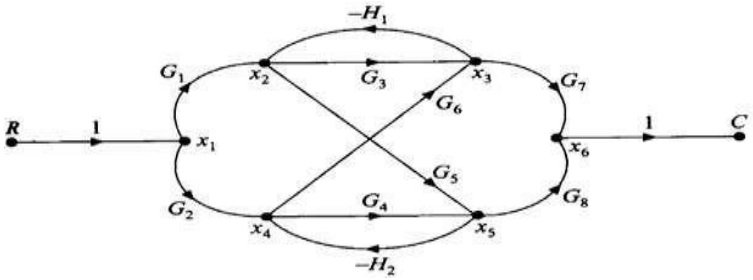
19. Find the overall transfer function of the system whose signal flow graph is shown below.



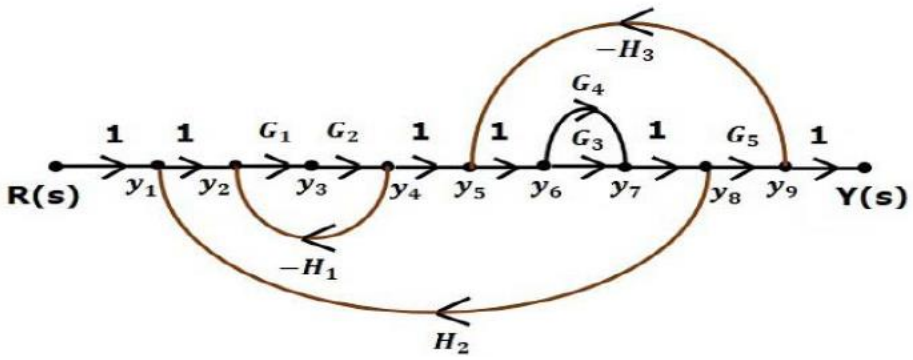
20. Obtain the transfer function of the system whose signal flow graph is shown below.



21. Considering the system shown in figure, obtain the transfer function using Masons Gain formula



22. Considering the system shown in figure, obtain the transfer function using Masons Gain formula.



23. Considering the system shown in figure, obtain the transfer function using Masons Gain formula.