QUESTION BANK

DEPARTMENT OF EEE

SUBJECT CODE: EC 2255

SUBJECT NAME: CONTROL SYSTEMS

YEAR: I

SEM:II

WORK DONE BY

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UNIT – 1
CONTROL SYSTEM MODELING
PART – A
1. What is system and control system?
2. What are the types of control system and explain it?
3. Write the application for open loop and closed loop control system.
4. Distinguish the open loop and closed loop control systems.
5. What are the components of control system?
6. Define transfer function.
7. What is differential equation?
8. What are the basic elements used for modeling mechanical translational system?
9. Write the force balance equation for
    a. Ideal mass element
    b. Ideal Dash-pot
    c. Ideal spring
10. What are the basic elements used for modeling mechanical rotational system?
11. Write the torque balance equations for
    a. Ideal rotational mass element
    b. Ideal rotational Dash-pot
    c. Ideal rotational spring
12. What are all the two types of electrical analogous of mechanical system?
13. What is Block diagram?
14. What are all the components of Block diagram?
15. What is a signal flow graph?
16. What is transmittance?
17. Define non-touching loops.
18. Write the properties of signal flow graph.
19. Write the mason's gain formula.
20. Compare the block diagram representation and signal flow graph.
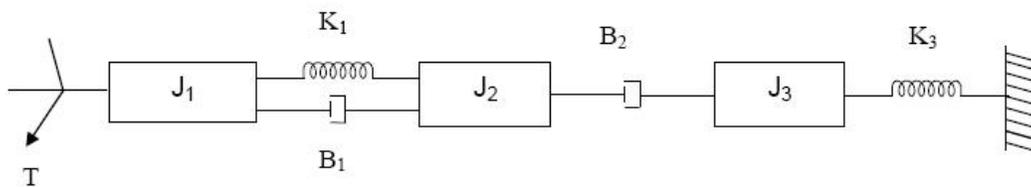
PART – B

1. Write the Differential equations governing the mechanical translational system shown in fig. and find the transfer function.
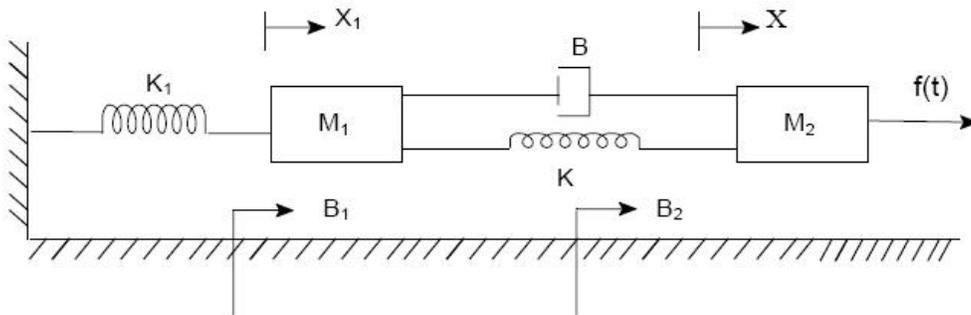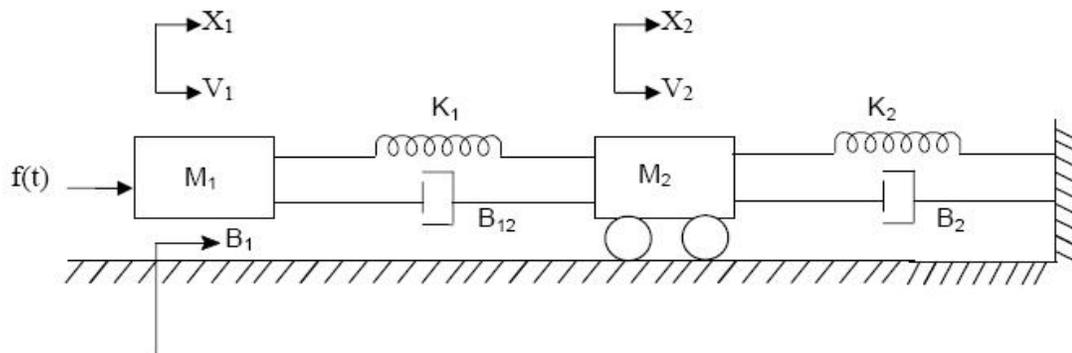

2. Find the transfer function $Y_2(S) / F(S)$
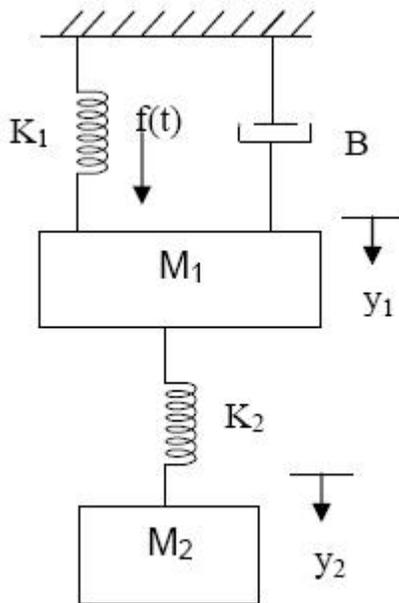
3. Write the Differential equations governing the mechanical rotational system shown in fig. and find the transfer function.
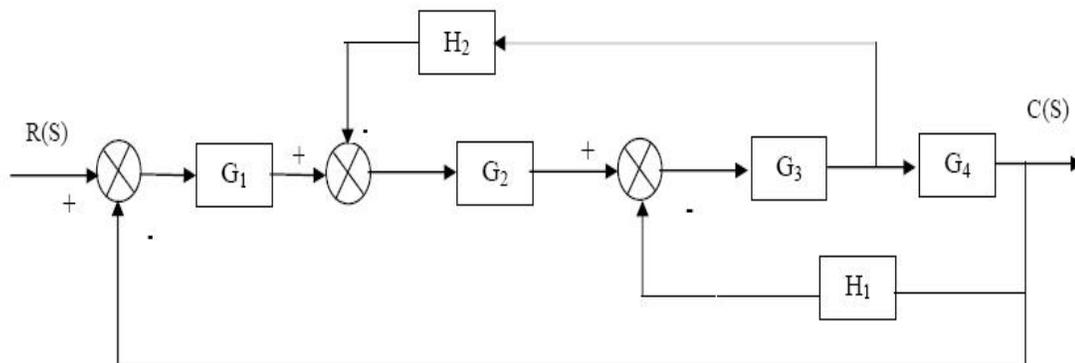
4. Write the differential equation governing the mechanical translational systems and find the transfer function. Draw the force voltage and force current electrical analogies.
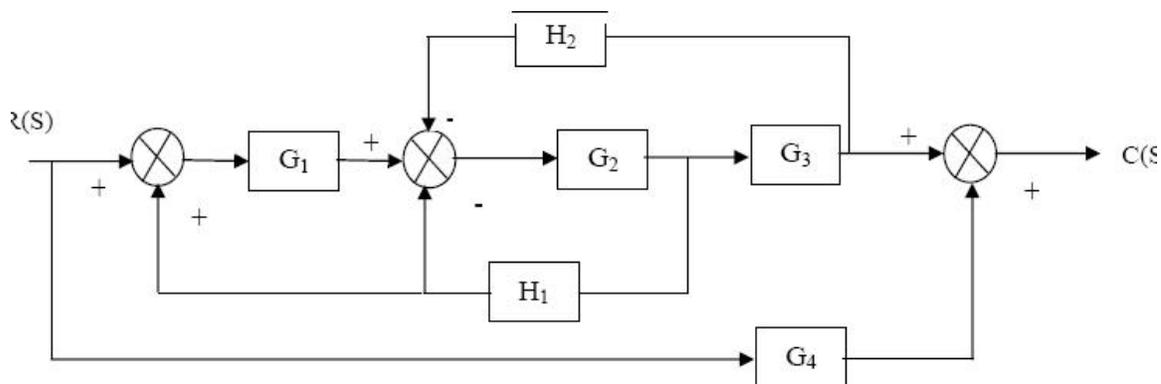

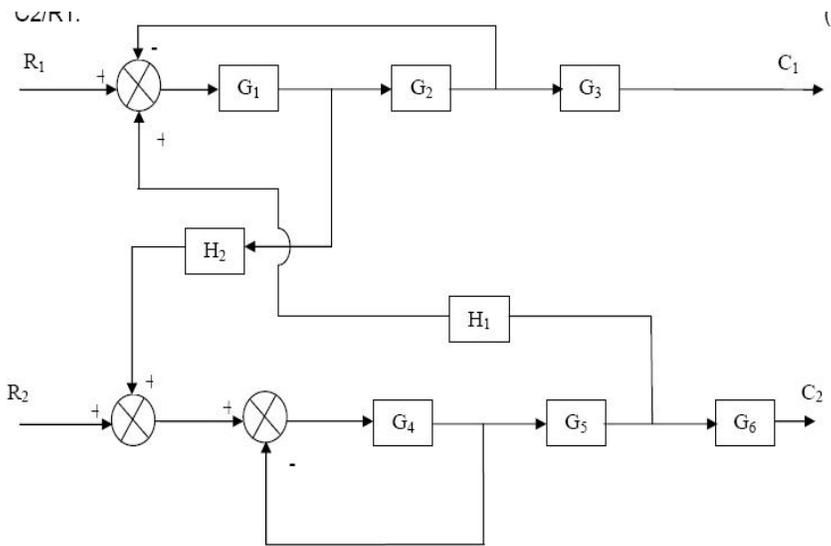5. Derive the transfer function for the armature and field controlled DC Motor.

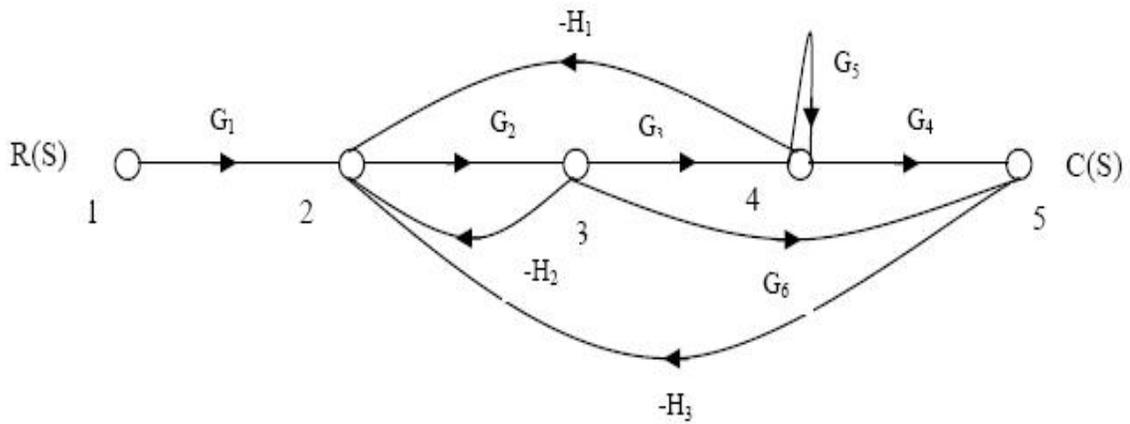6. Find the transfer function C(S)/R(S) for the system shown in fig.

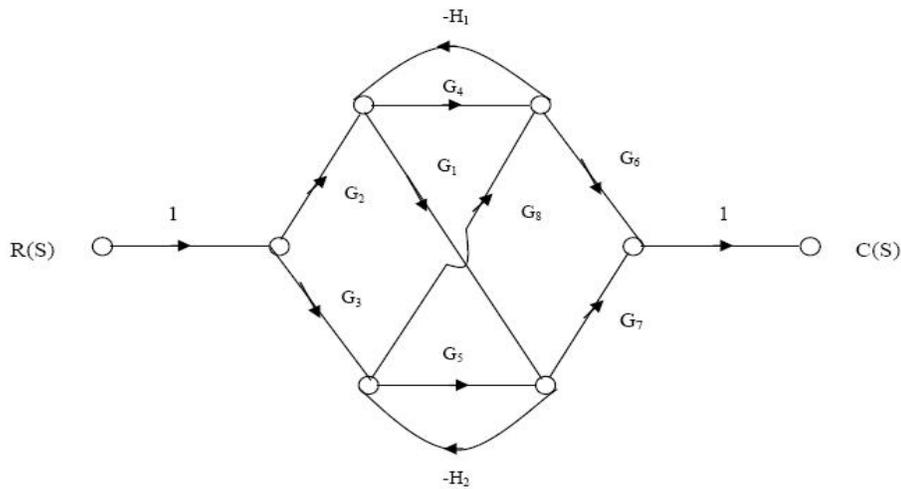7. Using Block diagram reduction technique finds the transfer function for the system shown in fig.

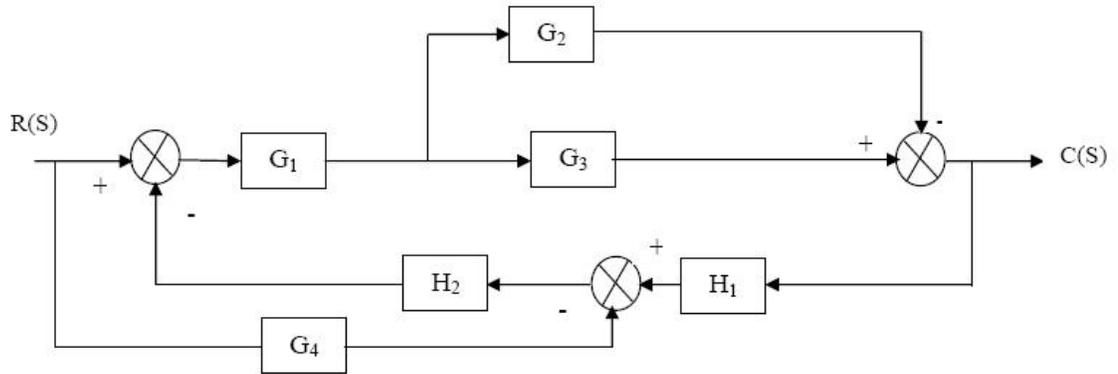8. For the Block diagram shown in fig. Find C_1 / R_1 and C_2 / R_1.

9. Find the overall gain C(S) / R(S) for the signal flow graph shown in fig.

10. Obtain the overall gain C(S) / R(S) for the signal flow graph shown in fig.

11. Draw a signal flow graph and find the closed loop transfer function for the block diagram shown in fig.

UNIT – 2
TIME RESPONSE ANALYSIS

PART – A

1. What is time response?
2. What is transient and steady state response?
3. Define pole and zero.
4. What is first order and second order systems?
5. What is the order of a system?
6. Distinguish between type and order of a system.
7. How the system is classified depending on the value of damping?