B.E. Sixth Semester (Aeronautical Engineering) (C.B.S.)

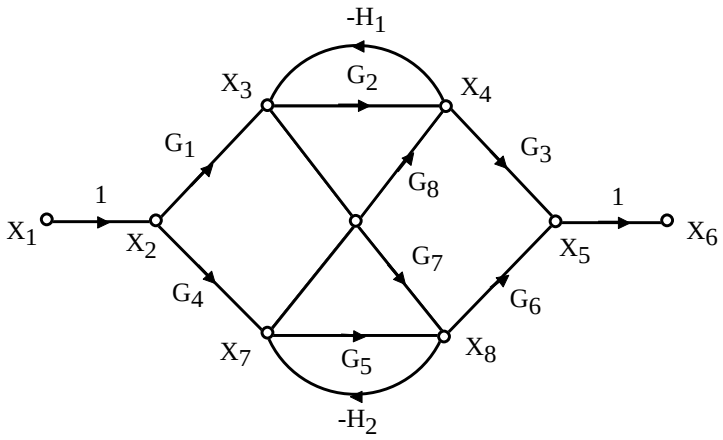
System Modelling and Simulation Paper – III

P. Pages : 3 **KNT/KW/16/7429**

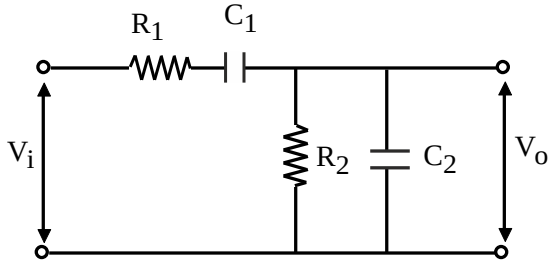
Time : Three Hours * 0 1 1 0 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Diagrams and chemical equations should be given whenever necessary.
11. Illustrate your answers whenever necessary with the help of neat sketches.
12. Use of non programmable calculator is permitted.

1. a) Obtain the overall transfer function by using Mason's gain formula. **8**

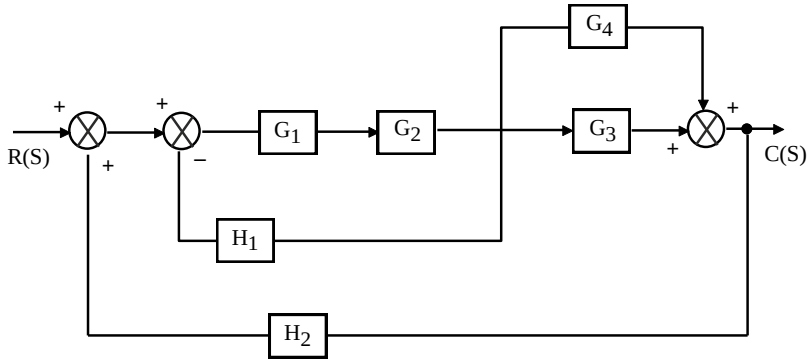


b) Determine the transfer function $\frac{V_o(s)}{V_i(s)}$ for the network shown in circuit. **6**

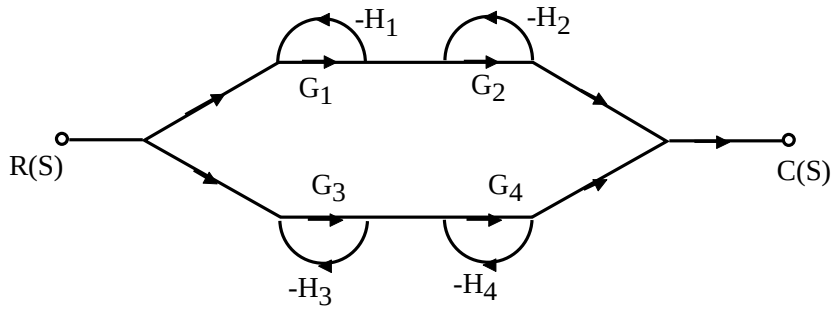


OR

2. a) Find the transfer function $\frac{C(s)}{R(s)}$ using block diagram reduction technique. **8**



b) Determine the transfer function $\frac{C(s)}{R(s)}$ of the fig. below using Mason's gain formula. **6**



3. a) What do you understand by the term 'System Environment'? What is the difference between endogenous & exogenous activities? Explain by giving examples. **7**

b) Name three or four principal entities, attributes & activities to be considered if you want to simulate the operation of : **6**
i) A gasoline filling (Petrol or Diesel Pump)
ii) Flying club

OR

4. a) Explain the difference between 'Static & Dynamic Physical model'. **4**

b) List out various models used in system modeling. **3**

c) Write a note on the following with an examples: **6**
i) Entity
ii) Attribute

5. Explain in detail about a model that use the combinations of all the three segments. **13**

OR

6. Explain the following in details with appropriate examples: **13**
i) System Analysis.
ii) System Design.
iii) System Postulation.

7. a) Explain in detail DC servomechanism. **7**

b) Explain hydraulic and pneumatic controllers. **7**

OR

8. a) Differentiate between AC & DC servomotors. **7**

b) Define open loop and closed loop control system. List out advantages and disadvantages of both the system. **7**

9. a) What do you mean by simuline? Also explain simulink and state flow. **6**

b) Write short notes on: **7**

i) Moving a block in a model.

ii) Duplicating block in a model.

OR

10. a) What is virtual block? Name different types of blocks name condition under which block will be virtual. **6**

b) Write short note on MATLAB. Also write its applications. **7**

11. a) Explain in detail about equipment used for measuring a distance. **7**

b) Explain in detail about a system which provides the alignment and descent information about the approach path of an aircraft. **6**

OR

12. Write short notes on **any three.** **13**

i) GCA (Ground Controlled Approach) System.

ii) VOR System.

iii) TACAN (Tactical Air Navigation) System.

iv) Decca Navigation System.

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