

[4]

OR

10. Short note on following: 14

- i) Design of compensating networks
- ii) Lag-lead compensation



Total No. of Questions :10]

[Total No. of Printed Pages :4

Roll No

EX - 602

B.E. VI Semester

Examination, December 2014

Control Systems

Time : Three Hours

Maximum Marks : 70

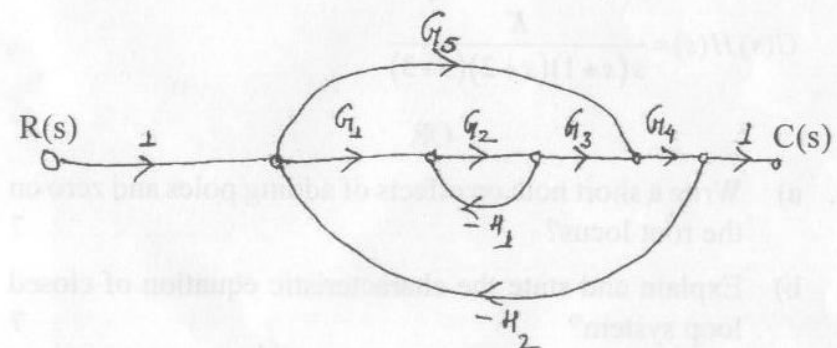
Note: Attempt any one question from each unit.

Unit - I

- 1. a) Explain the difference between physical system and control system? 7
- b) Explain the block diagram of D.C. motor speed control? 7

OR

- 2. a) Explain the Mason's gain formula? 4
- b) Find $\frac{C(s)}{R(s)}$ by using Mason's gain formula? 10



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Unit - II

3. a) For unit feedback system. 10

$$G(s) = \frac{10(s+1)}{s^2(s+2)(s+10)}$$

Determine:

- Type of system
 - Error coefficient
- b) Explain the Delay time, Rise time, Peak time and Peak overshoot in time response? 4

OR

4. a) Examine the stability of the system by Routh's criterion.

$$s^5 + s^4 + 2s^3 + 2s^2 + 3s + 15 = 0 \quad 7$$

- b) Explain the proportional integral and derivative control system? 7

Unit - III

5. Sketch the complete root locus of system having. 14

$$G(s)H(s) = \frac{K}{s(s+1)(s+2)(s+3)}$$

OR

- Write a short note on effects of adding poles and zero on the root locus? 7
- Explain and state the characteristic equation of closed loop system? 7

[3]

Unit - IV

7. A unity feedback control system has 14

$$G(s) = \frac{80}{s(s+2)(s+20)}$$

Draw the Bode plot. Determine the Gain Margin and phase Margin.

OR

8. a) For a unity feedback system, 10

$$G(s) = \frac{10}{s(s+1)(s+4)}$$

Obtain analytically, the gain margin and phase margin.

- b) Write down the advantage of Bode plot? 4

Unit - V

9. Obtain the transfer function of the lag network shown. 14

