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OR

10. Short note on following: 14

    i)   Design of compensating networks

    ii)   Lag-lead compensation

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Roll No ....

EX - 602
B.E. VI Semester
Examination, December 2014
Control Systems

Time : Three Hours

Maximum Marks : 70

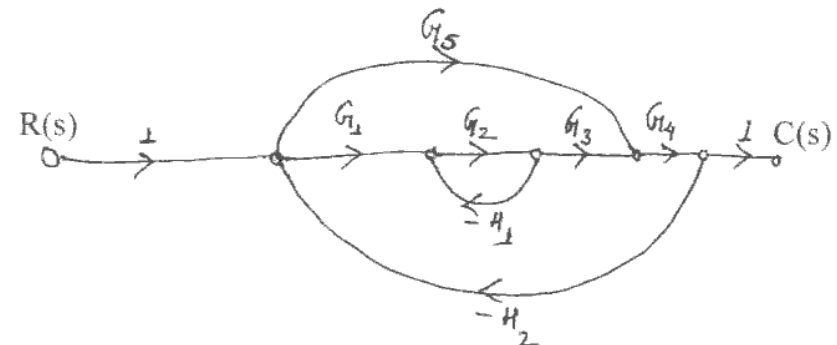*Note:* Attempt any one question from each unit.

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 $\dfrac{C(s)}{R(s)}$ by using Mason's gain formula?   10

Unit - II

3. a) For unit feedback system. 10

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

Determine:

i) Type of system

ii) 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.

$$s^5 + s^4 + 2s^3 + 2s^2 + 3s + 15 = 0$$ 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

6. a) Write a short note on effects of adding poles and zero on the root locus? 7

b) Explain and state the characteristic equation of closed loop system? 7

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