Roll No. ..... Total No. of Pages : 2

BT-6/JX 8725

Control System Engineering

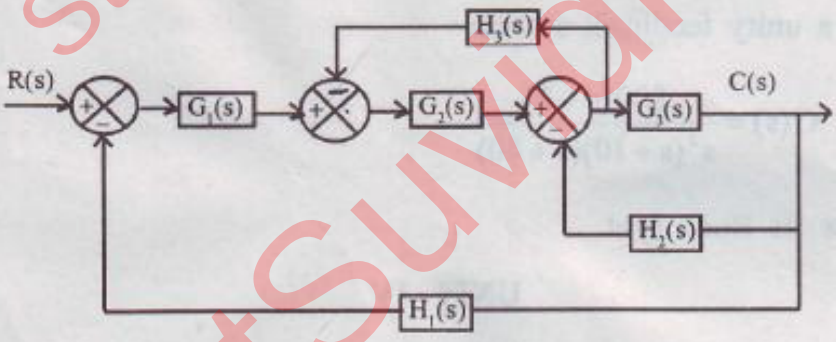
Paper : ECE-302E

Time : Three Hours] [Maximum Marks : 100

Note :– Attempt **FIVE** questions, selecting at least **ONE** question from each Unit.

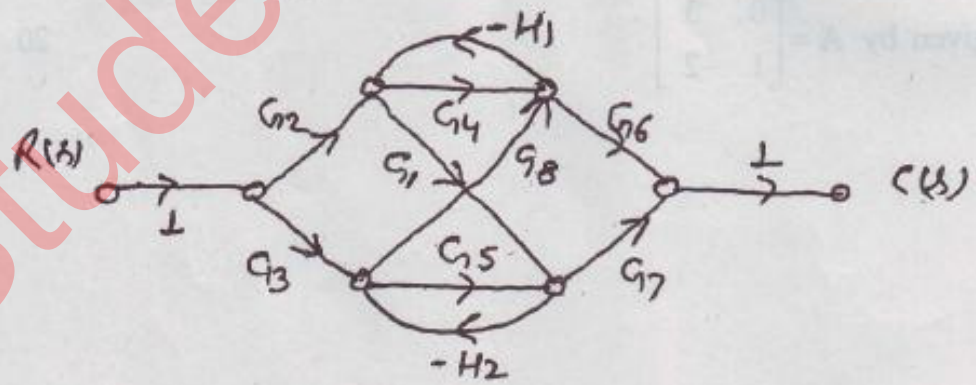
UNIT–I

1. Find out transfer function $\frac{C(s)}{R(s)}$ of the following system :



20

2. Determine $\frac{C(s)}{R(s)}$ using Signal Flow Graph.



20

UNIT–II

3. (a) Explain Standred Test Signals. 10

   (b) Explain Time Response Specifications. 10

4. Using Routh Criterion check the stability of the following system :

   $s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16s + 16 = 0$. 20

UNIT–III

5. Construct Root Locus of the System whose open Loop Transfer Function is

$$G(s)H(s) = \frac{K}{(s+1)(s^2+4s+5)}.$$ 20

6. For a unity feedback system

$$G(s) = \frac{800(s+2)}{s^2(s+10)(s+40)}.$$

   Draw its Bode Plot. 20

UNIT–IV

7. Explain Compensation of Feedback system. 20

8. Calculate the State Transition Matrix of system whose slate is given by $A = \begin{bmatrix} 0 & 3 \\ 1 & -2 \end{bmatrix}$. 20