



Feedback Control System (1030)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

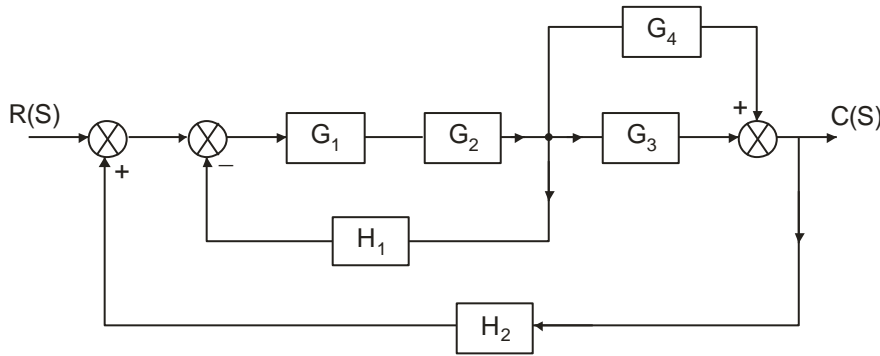
1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Answer **any two** questions from each unit & assume suitable data if necessary.
5. Use of non programmable calculator is allowed.
6. Figure to the right indicate full marks.

1.

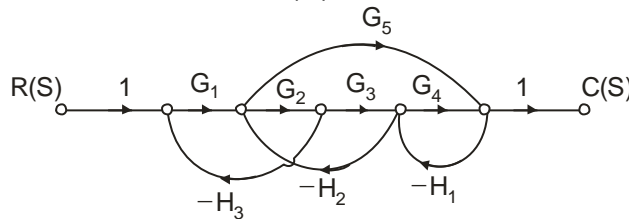
UNIT – I

10

- a) Determine the transfer function $\frac{C(S)}{R(S)}$ from block diagram below. 10



- b) Explain the difference between open loop & closed loop system with one detailed example of each.
- c) Find transfer function $\frac{C(S)}{R(S)}$ of a given SFG using Mason's Gain formula 10



UNIT – II

2. a) What are the standard test signals, What is their need? Explain all test signals in detail. **10**
- b) A unity feedback system has $G(S) = \frac{40(S+2)}{S(S+1)(S+4)}$ **10**
determine a) types of system b) all error coefficients & c) error for ramp input with magnitude 4.
- c) Write short note on : **10**
a) Stepper motor
b) Synchros

UNIT – III

3. a) The feedback control system has $G(S)H(S) = \frac{K}{S(S^2 + 2S + 2)}$ **10**
draw complete root – locus & comment on stability of the system.
- b) Explain all the rules to draw root – locus. **10**
- c) Sketch the root-locus & comment on stability if **10**
 $G(S)H(S) = \frac{K(S+4)}{S(S^2 + 2S + 2)}$

UNIT – IV

4. a) What is nyquist stability criterion? Explain the steps to draw nyquist plot. **10**
- b) A unity feedback control system has $G(S) = \frac{80}{S(S+2)(S+20)}$ **10**
draw the bode plot. Determine GM, PM, Wgc, Wpc & comment on stability.
- c) What is the significance of Gain margin & phase margin for a good system & explain how to improve Gain margin & phase margin. **10**

UNIT – V

5. a) Define terms : **10**
a) state
b) state variable
c) state vector
d) state space
e) state trajectory.
- b) Write short notes on P, PI & PID controllers. **10**
- c) Explain in short 1) Fuzzy logic 2) Robotic system. **10**
