

III B.Tech I Semester Supplementary Examinations, November 2005
BIOLOGICAL CONTROL SYSTEMS
(Bio-Medical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. (a) Obtain overall transfer function using Mason's gain formula for the circuit Shown in figure1

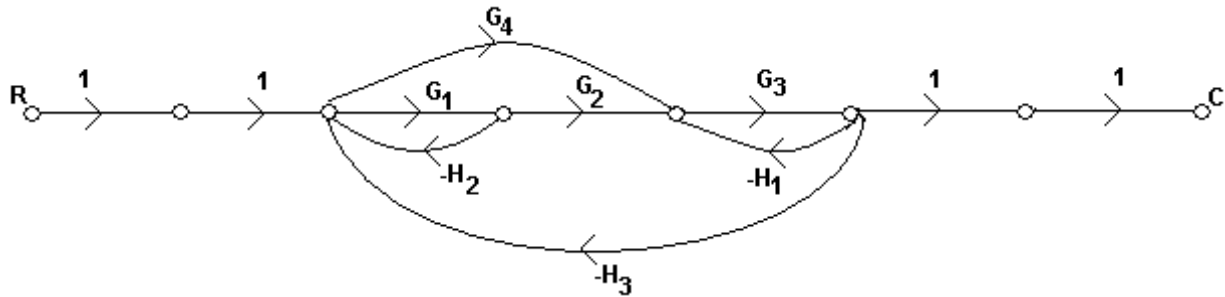


Figure 1:

- (b) Obtain transfer function of the network shown in figure2

[8 +8]

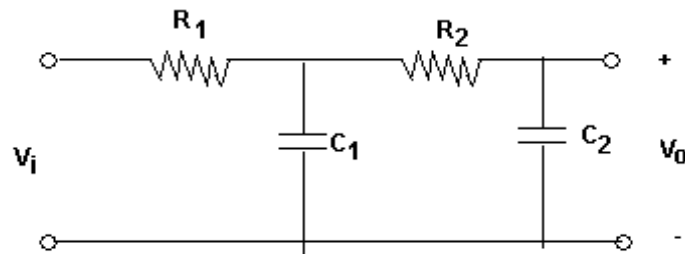


Figure 2:

2. (a) Construct the root locus for $G(s)H(s) = \frac{K}{s(s+1)(s+3)(s+4)}$
 (b) Write a note on Routh Hurwitz criterion. [11+5]
3. (a) Determine the stability of the system. If unstable find number of roots of characteristic equation in the right half of S-plane.
 i. $s^4 + 2s^3 + 8s^2 + 4s + 3 = 0$
 ii. $s^4 - 2s^3 + s^2 + 4s + 2 = 0$
 (b) Write a note on closed loop control system. [11+4]
4. With a information flow diagram, explain with equation the concept pf thermoregulations. [16]

5. With a block diagram explain the concept of visual fixation system. [16]
6. Explain the transfer function models of receptors. [16]
7. Explain the terms:
- (a) Endocrine control system
 - (b) Free swinging limbs. [16]
8. Explain the terms:
- (a) Receptor characteristics
 - (b) PCS. [16]

★ ★ ★ ★ ★