2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS
BIOLOGICAL CONTROL SYSTEM
(BIO -MEDICAL ENGINEERING)

NOVEMBER 2005

TIME – 3 HOUR
MARK – 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

 (b) Obtain transfer function of the network shown in figure2   [8 +8]

2. (a) Construct the root locus for $G(s)H(s) = K \, s(s+1)(s+3)(s+4)$

(b) Write a note on Roult Hurwitz criterion.   [6+10]

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. $s4 + 2s3 + 8s2 + 4s + 3 = 0$

 ii. $s4 - 2s3 + s2 + 4s + 2 = 0$

 (b) Write a note on closed loop control system.   [6+10]

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.   [8+8]

8. Explain the terms:

(a) Receptor characteristics

(b) PCS.   [8+8]