

III B.Tech I Semester Supplementary Examinations, November 2006
BIOLOGICAL CONTROL SYSTEMS
(Bio-Medical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. (a) Unity feedback system is characterized in the open loop transfer function,
 $G(S) = \frac{1}{S(0.5S+1)(0.2S+1)}$ Find e_{SS} for unit step, unit ramp and unit acceleration input, C_y and W_n of dominant roots. [10]
 (b) Explain the RH criterion with an example. [4]
2. (a) For the figure 1 shown find $\frac{C}{R}$ using SFG method. [10]
 (b) Write a note on dynamic systems and their control. [4]

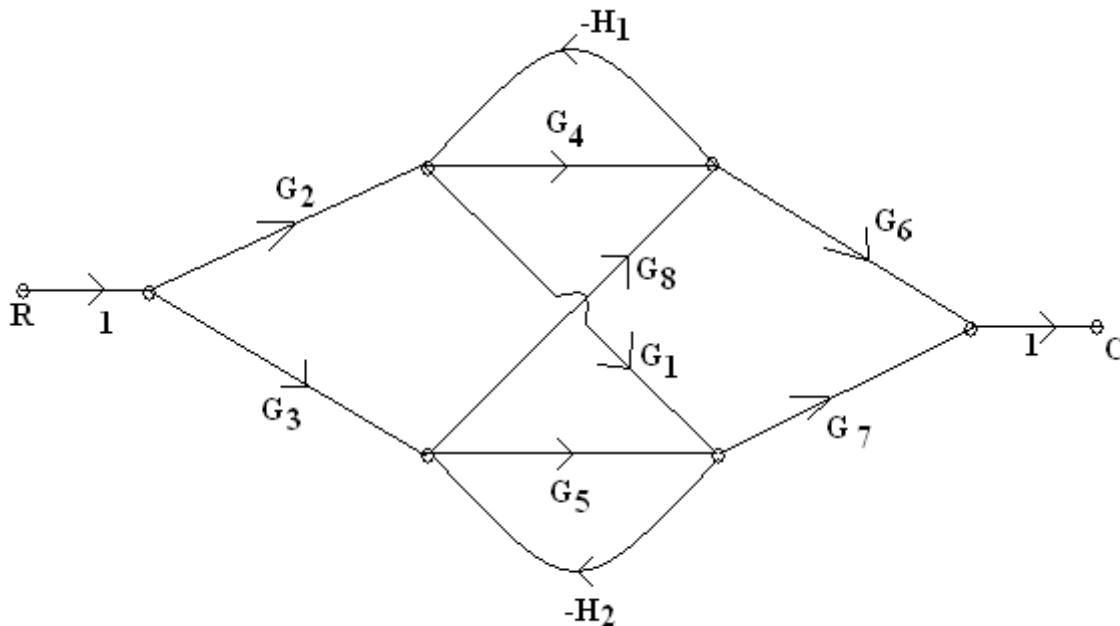


Figure 1:

3. Construct the root locus for Re characteristic equation.
 $S(S+5)(S+6)(S^2+2S+2)+K(S+3)=0$ Given $K > 0$. [16]
4. Explain the following terms:
 - (a) Skeletal Muscle Servo Mechanism
 - (b) Regulation of blood glucose. [8+8]
5. Describe the terms:

- (a) Regulation of CO_2
- (b) Endocrine control system. [8+8]
- 6. (a) With mathematical equation explain the production of heat in the human body and heat loss to the environment. [10]
- (b) Write a note on human operator. [6]
- 7. (a) Explain with a block diagram the method of tracking a target by the human eye. [10]
- (b) Write a note on Bio feed back. [6]
- 8. Write short notes on:
 - (a) Sugar level control system.
 - (b) Semi circular Canal. [8+8]
