Code No: R05321101 **R05** **Set No. 2**

III B.Tech II Semester Examinations,December 2010
BIOLOGICAL CONTROL SYSTEMS
Bio-Medical Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Obtain the transfer function of the network as shown in figure 1a.

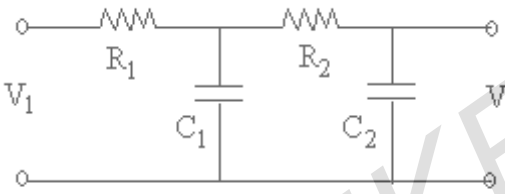

Figure 1a

(b) Explain in brief a feedback control system. [10+6]

2. Explain the Cardiovascular control system? [16]

3. Give a short notes on :
   (a) Blood cortisol control
   (b) Blood Thyroxin control [8+8]

4. Explain the skeletal-muscle control system with a help of information flow diagram. [16]

5. Consider a unity feedback system with $G(s) = \frac{k}{s(s+a)}$. The sensitivity of steady state error (e_{ss}) to the parameter changes 'k' and 'a' for the ramp input. [16]

6. Explain the complete oculomotor system with relevant figures. [16]

7. Explain Receptor characteristics? [16]

8. (a) Explain the necessary conditions for stability and also Routh stability criteria.
   (b) The characteristics of a system is S^2-(K+2)S+2K+5=0
   Find the value of K for which the system is stable, limitedly stable and unstable. [6+10]

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Code No: R05321101 **R05** **Set No. 4**

III B.Tech II Semester Examinations,December 2010
BIOLOGICAL CONTROL SYSTEMS
Bio-Medical Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Consider a unity feedback system with $G(s) = \frac{k}{s(s+a)}$. The sensitivity of steady state error (e_{ss}) to the parameter changes 'k' and 'a' for the ramp input. [16]

2. (a) Obtain the transfer function of the network as shown in figure 1a.

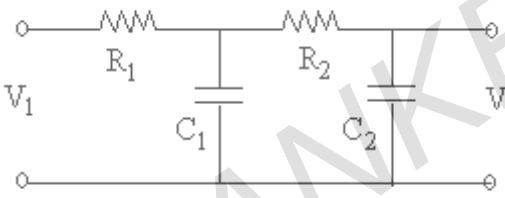

Figure 1a

(b) Explain in brief a feedback control system. [10+6]

3. Explain the complete oculomotor system with relevant figures. [16]

4. Explain Receptor characteristics? [16]

5. Give a short notes on :

(a) Blood cortisol control

(b) Blood Thyroxin control [8+8]

6. Explain the Cardiovascular control system? [16]

7. (a) Explain the necessary conditions for stability and also Routh stability criteria.

(b) The characteristics of a system is S^2-(K+2)S+2K+5=0
Find the value of K for which the system is stable, limitedly stable and unstable. [6+10]

8. Explain the skeletal-muscle control system with a help of information flow diagram. [16]

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Code No: R05321101 **R05** **Set No. 1**

III B.Tech II Semester Examinations,December 2010
BIOLOGICAL CONTROL SYSTEMS
Bio-Medical Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Explain the necessary conditions for stability and also Routh stability criteria.
   (b) The characteristics of a system is S^2-(K+2)S+2K+5=0
   Find the value of K for which the system is stable, limitedly stable and unstable. [6+10]
2. Explain Receptor characteristics? [16]
3. Explain the skeletal-muscle control system with a help of information flow diagram. [16]
4. (a) Obtain the transfer function of the network as shown in figure 1a.

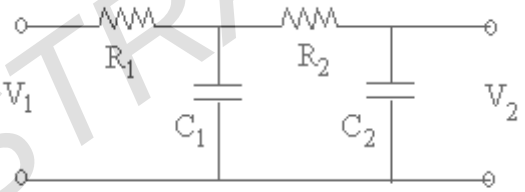

Figure 1a

   (b) Explain in brief a feedback control system. [10+6]
5. Give a short notes on :
   (a) Blood cortisol control
   (b) Blood Thyroxin control [8+8]
6. Explain the complete oculomotor system with relevant figures. [16]
7. Consider a unity feedback system with $G(s) = \frac{k}{s(s+a)}$. The sensitivity of steady state error (e_{ss}) to the parameter changes 'k' and 'a' for the ramp input. [16]
8. Explain the Cardiovascular control system? [16]

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Code No: R05321101 **R05** **Set No. 3**

III B.Tech II Semester Examinations,December 2010
BIOLOGICAL CONTROL SYSTEMS
Bio-Medical Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Obtain the transfer function of the network as shown in figure 1a.

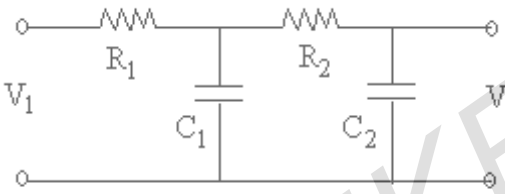

Figure 1a

(b) Explain in brief a feedback control system. [10+6]

2. Give a short notes on :
   (a) Blood cortisol control
   (b) Blood Thyroxin control [8+8]

3. (a) Explain the necessary conditions for stability and also Routh stability criteria.
   (b) The characteristics of a system is S^2-(K+2)S+2K+5=0
   Find the value of K for which the system is stable, limitedly stable and unstable. [6+10]

4. Explain the skeletal-muscle control system with a help of information flow diagram. [16]

5. Explain Receptor characteristics? [16]

6. Consider a unity feedback system with $G(s) = \frac{k}{s(s+a)}$. The sensitivity of steady state error (e_{ss}) to the parameter changes 'k' and 'a' for the ramp input. [16]

7. Explain the complete oculomotor system with relevant figures. [16]

8. Explain the Cardiovascular control system? [16]

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