Code No: 54025 **Set No. 1**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
II B.Tech. II Sem., II Mid-Term Examinations, April – 2014
CONTROL SYSTEMS
Objective Exam

Name: _____ Hall Ticket No. | | | | | | A | | | | |

Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. A Bode plot represents [ ]
(a) The gain vs. frequency (b) The phase vs. frequency
(c) The gain vs.phase (d) The gain vs. frequency and the phase vs. frequency

2. The phase of the system G(s) = 1/(s+1) is: [ ]
(a) $\tan^{-1}(\omega)$ (b) $-\tan(\omega)$ (c) $\tan(\omega)$ (d) $-\tan^{-1}(\omega)$

3. The magnitude and phase of the transfer function G(s)=1/(s+1) at ω =1 is: [ ]
(a) 0.707 and 45 degrees (b) –3 dB and 0.78 radian
(c) 0.707 and –45 degrees (d) 3 dB and –90 degrees

4. The high frequency range indicates [ ]
(a) The noise attenuation (b) The stability
(c) The mid-range amplification (d) The steady-state error

5. The transfer function G(s) = 10/(3s + 1) has a corner frequency at [ ]
(a) 3 rad/s (b) 0.33 rad/s (c) 1 rad/s (d) 30 rad/s

6. If the Nyquist plot of the loop transfer function G(s) H (s) of a closed-loop system encloses the (−1, jo) point in the G(s) H (s) plane, the gain margin of the system is [ ]
(a) zero (b) greater than zero (c) less than zero (d) infinity

7. A controller essentially is a [ ]
(a) Comparator (b) Sensor (c) Amplfier (d) Clipper

8. The transfer function of a phase-lead controller is given by [ ]
(a) (1+aTs)/(1+Ts),a>1,T>0 (b) (1+aTs)/(1+Ts),a<1,T>0
(c) (1-aTs)/(1+Ts),a>1,T>0 (d) (1-aTs)/(1+Ts),a<1,T>0

9. Lag-lead compensator is a [ ]
(a) low pass filter (b) high pass filter (c) band pass filter (d) band stop filter

10. Effect of Phase lead compensator is [ ]
(a) reduces rise time (b) reduces settling time (c) Improves steady state accuracy (d) both a and b

Cont....2

II Fill in the blanks:

11. The D.C. gain of $G(s) = (s+4)/ s(s + 0.1) (s^2 + s + 1)$ is_____

12. The phase margin of the system $G(s)=10/(s+1)$ is_____

13. Lead compensator is also called_____ filter

14. The proportional controller (Kp) increases _____

15. The effect of PID controller on steady state error is_____

16. The gain margin will be calculated at _____frequency.

17. Nyquist stability criterion works on the principle called_____

18. If the nyquist contour consists two encirclements in clock-wise direction around the critical point (-1+j0),then the value of N is_____

19. If the system is described with $A=\begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$, The poles of the system are located at _____

20. If the phase cross over frequency is lesser than gain cross over frequency ,the system becomes_____

-oOo-

Code No: 54025 **Set No. 2**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
II B.Tech. II Sem., II Mid-Term Examinations, April – 2014
CONTROL SYSTEMS
Objective Exam

Name: _____ Hall Ticket No. | | | | | | A | | | | |

Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. The high frequency range indicates [ ]
   (a) The noise attenuation (b) The stability
   (c) The mid-range amplification (d) The steady-state error

2. The transfer function G(s) = 10/(3s + 1) has a corner frequency at [ ]
   (a) 3 rad/s (b) 0.33 rad/s (c) 1 rad/s (d) 30 rad/s

3. If the Nyquist plot of the loop transfer function G(s) H (s) of a closed-loop system encloses the (−1, jo) point in the G(s) H (s) plane, the gain margin of the system is [ ]
   (a) zero (b) greater than zero (c) less than zero (d) infinity

4. A controller essentially is a [ ]
   (a) Comparator (b) Sensor (c) Amplfier (d) Clipper

5. The transfer function of a phase-lead controller is given by [ ]
   (a) (1+aTs)/(1+Ts),a>1,T>0 (b) (1+aTs)/(1+Ts),a<1,T>0
   (c) (1-aTs)/(1+Ts),a>1,T>0 (d) (1-aTs)/(1+Ts),a<1,T>0

6. Lag-lead compensator is a [ ]
   (a) low pass filter (b) high pass filter (c) band pass filter (d) band stop filter

7. Effect of Phase lead compensator is [ ]
   (a) reduces rise time (b) reduces settling time (c) Improves steady state accuracy (d) both a and b

8. A Bode plot represents [ ]
   (a) The gain vs. frequency (b) The phase vs. frequency
   (c) The gain vs.phase (d) The gain vs. frequency and the phase vs. frequency

9. The phase of the system G(s) = 1/(s+1) is: [ ]
   (a) $\tan^{-1}(\omega)$ (b) $-\tan(\omega)$ (c) $\tan(\omega)$ (d) $-\tan^{-1}(\omega)$

10. The magnitude and phase of the transfer function G(s)=1/(s+1) at ω =1 is: [ ]
    (a) 0.707 and 45 degrees (b) –3 dB and 0.78 radian
    (c) 0.707 and –45 degrees (d) 3 dB and –90 degrees

Cont....2

II Fill in the blanks:

11. The proportional controller (Kp) increases _____

12. The effect of PID controller on steady state error is_____

13. The gain margin will be calculated at _____frequency.

14. Nyquist stability criterion works on the principle called_____

15. If the nyquist contour consists two encirclements in clock-wise direction around the critical point (-1+j0),then the value of N is_____

16. If the system is described with A=$\begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$, The poles of the system are located at _____

17. If the phase cross over frequency is lesser than gain cross over frequency ,the system becomes_____

18. The D.C. gain of G(s) =(s+4)/ s(s + 0.1) (s^2 + s + 1) is_____

19. The phase margin of the system G(s)=10/(s+1) is_____

20. Lead compensator is also called_____ filter

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Code No: 54025 **Set No. 3**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

II B.Tech. II Sem., II Mid-Term Examinations, April – 2014

CONTROL SYSTEMS

Objective Exam

Name: _____ Hall Ticket No. | | | | | | A | | | | |

Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. If the Nyquist plot of the loop transfer function G(s) H (s) of a closed-loop system encloses the (−1, jo) point in the G(s) H (s) plane, the gain margin of the system is [ ]
(a) zero (b) greater than zero (c) less than zero (d) infinity

2. A controller essentially is a [ ]
(a) Comparator (b) Sensor (c) Amplfier (d) Clipper

3. The transfer function of a phase-lead controller is given by [ ]
(a) (1+aTs)/(1+Ts),a>1,T>0 (b) (1+aTs)/(1+Ts),a<1,T>0
(c) (1-aTs)/(1+Ts),a>1,T>0 (d) (1-aTs)/(1+Ts),a<1,T>0

4. Lag-lead compensator is a [ ]
(a) low pass filter (b) high pass filter (c) band pass filter (d) band stop filter

5. Effect of Phase lead compensator is [ ]
(a) reduces rise time (b) reduces settling time (c) Improves steady state accuracy (d) both a and b

6. A Bode plot represents [ ]
(a) The gain vs. frequency (b) The phase vs. frequency
(c) The gain vs.phase (d) The gain vs. frequency and the phase vs. frequency

7. The phase of the system G(s) = 1/(s+1) is: [ ]
(a) $\tan^{-1}(\omega)$ (b) $-\tan(\omega)$ (c) $\tan(\omega)$ (d) $-\tan^{-1}(\omega)$

8. The magnitude and phase of the transfer function G(s)=1/(s+1) at ω =1 is: [ ]
(a) 0.707 and 45 degrees (b) –3 dB and 0.78 radian
(c) 0.707 and –45 degrees (d) 3 dB and –90 degrees

9. The high frequency range indicates [ ]
(a) The noise attenuation (b) The stability
(c) The mid-range amplification (d) The steady-state error

10. The transfer function G(s) = 10/(3s + 1) has a corner frequency at [ ]
(a) 3 rad/s (b) 0.33 rad/s (c) 1 rad/s (d) 30 rad/s

Cont....2

II Fill in the blanks:

11. The gain margin will be calculated at _____frequency.

12. Nyquist stability criterion works on the principle called_____

13. If the nyquist contour consists two encirclements in clock-wise direction around the critical point (-1+j0),then the value of N is_____

14. If the system is described with A=$\begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$, The poles of the system are located at _____

15. If the phase cross over frequency is lesser than gain cross over frequency ,the system becomes_____

16. The D.C. gain of G(s) =(s+4)/ s(s + 0.1) (s^2 + s + 1) is_____

17. The phase margin of the system G(s)=10/(s+1) is_____

18. Lead compensator is also called_____ filter

19. The proportional controller (Kp) increases _____

20. The effect of PID controller on steady state error is_____

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Code No: 54025 **Set No. 4**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
II B.Tech. II Sem., II Mid-Term Examinations, April – 2014
CONTROL SYSTEMS
Objective Exam

Name: _____ Hall Ticket No. | | | | | | A | | | | |

Answer All Questions. All Questions Carry Equal Marks. Time: 20 Min. Marks: 10.

I Choose the correct alternative:

1. The transfer function of a phase-lead controller is given by [ ]
(a) (1+aTs)/(1+Ts),a>1,T>0 (b) (1+aTs)/(1+Ts),a<1,T>0
(c) (1-aTs)/(1+Ts),a>1,T>0 (d) (1-aTs)/(1+Ts),a<1,T>0

2. Lag-lead compensator is a [ ]
(a) low pass filter (b) high pass filter (c) band pass filter (d) band stop filter

3. Effect of Phase lead compensator is [ ]
(a) reduces rise time (b) reduces settling time (c) Improves steady state accuracy (d) both a and b

4. A Bode plot represents [ ]
(a) The gain vs. frequency (b) The phase vs. frequency
(c) The gain vs.phase (d) The gain vs. frequency and the phase vs. frequency

5. The phase of the system G(s) = 1/(s+1) is: [ ]
(a) $\tan^{-1}(\omega)$ (b) $-\tan(\omega)$ (c) $\tan(\omega)$ (d) $-\tan^{-1}(\omega)$

6. The magnitude and phase of the transfer function G(s)=1/(s+1) at ω =1 is: [ ]
(a) 0.707 and 45 degrees (b) –3 dB and 0.78 radian
(c) 0.707 and –45 degrees (d) 3 dB and –90 degrees

7. The high frequency range indicates [ ]
(a) The noise attenuation (b) The stability
(c) The mid-range amplification (d) The steady-state error

8. The transfer function G(s) = 10/(3s + 1) has a corner frequency at [ ]
(a) 3 rad/s (b) 0.33 rad/s (c) 1 rad/s (d) 30 rad/s

9. If the Nyquist plot of the loop transfer function G(s) H (s) of a closed-loop system encloses the (−1, jo) point in the G(s) H (s) plane, the gain margin of the system is [ ]
(a) zero (b) greater than zero (c) less than zero (d) infinity

10. A controller essentially is a [ ]
(a) Comparator (b) Sensor (c) Amplfier (d) Clipper

Cont....2

II Fill in the blanks:

11. If the nyquist contour consists two encirclements in clock-wise direction around the critical point (-1+j0),then the value of N is_____

12. If the system is described with A=$\begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$, The poles of the system are located at _____

13. If the phase cross over frequency is lesser than gain cross over frequency ,the system becomes_____

14. The D.C. gain of G(s) =(s+4)/ s(s + 0.1) (s^2 + s + 1) is_____

15. The phase margin of the system G(s)=10/(s+1) is_____

16. Lead compensator is also called_____ filter

17. The proportional controller (Kp) increases _____

18. The effect of PID controller on steady state error is_____

19. The gain margin will be calculated at _____frequency.

20. Nyquist stability criterion works on the principle called_____

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