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Unit 9 - Week 7

Course outline

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Assignment 7

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-18, 23:59 IST.

- 1) Let the open loop transfer function of a negative feedback closed loop system be $\frac{K(s+1)}{s^3+2s^2+2s}$ where K is a non-positive real valued parameter. Consider the locus of the corresponding closed loop poles. The region of the real axis that does not lie on the root locus is 1 point
- (0, 2)
 - (-1, 0)
 - $(-\infty, -1)$
 - (0, ∞)
- No, the answer is incorrect.
Score: 0
Accepted Answers:
(-1, 0)
- 2) In problem 1, which ONE of the following statements is TRUE about the locus of the closed loop poles? 1 point
- It would have 3 asymptotes
 - It would have the positive real axis as the only asymptote
 - It would have the negative real axis as the only asymptote
 - It would have both the positive real axis and the negative real axis as asymptotes
- No, the answer is incorrect.
Score: 0
Accepted Answers:
It would have both the positive real axis and the negative real axis as asymptotes
- 3) In problem 1, which ONE of the following statements is TRUE about the locus of the closed loop poles? 1 point
- It has exactly one break-in point
 - It has exactly one break-away point
 - It has both a break-away and a break-in point
 - It neither has a break-away point nor a break-in point
- No, the answer is incorrect.
Score: 0
Accepted Answers:
It has exactly one break-in point
- 4) In problem 1, the angle of departure (in $^\circ$) of the root locus branch from the open loop at pole at $-1+j$ is 1 point
- 45
 - 90
 - 135
 - 225
- No, the answer is incorrect.
Score: 0
Accepted Answers:
225
- 5) The closed loop system of problem 1 is stable for 1 point
- all $K < 0$
 - all $K < -1$
 - all $K < -2$



no value of $K < 0$

No, the answer is incorrect.
Score: 0

Accepted Answers:
no value of $K < 0$

6) If one had positive feedback in problem 1 with everything else remaining the same, which one of the following statements is TRUE? **1 point**

- The locus of closed loop poles would have only one asymptote
- The closed loop system would be stable for all $K < 0$
- The locus of closed loop poles would have only one break-away point
- The locus of closed loop poles would partly lie in the right half complex plane

No, the answer is incorrect.
Score: 0

Accepted Answers:
The closed loop system would be stable for all $K < 0$

7) Let the open loop transfer function of a positive feedback closed loop system be $\frac{K(s-2)}{(s^2+4s+3)}$ where K is a non-negative real valued parameter. Consider the corresponding locus of closed loop poles. Which one of the following statements is TRUE? **1 point**

- The region $(-\infty, -3)$ lies on the root locus
- The region $(-\infty, -4)$ lies on the root locus
- The region $(-3, -1)$ lies on the root locus
- The region $(-1, 2)$ lies on the root locus

No, the answer is incorrect.
Score: 0

Accepted Answers:
The region $(-3, -1)$ lies on the root locus

8) In problem 7, which ONE of the following statements is TRUE about the locus of the closed loop poles? **1 point**

- It would have 2 asymptotes
- It would not have any asymptotes
- It would have the negative real axis as the only asymptote
- It would have the positive real axis as the only asymptote

No, the answer is incorrect.
Score: 0

Accepted Answers:
It would have the positive real axis as the only asymptote

9) In problem 7, the break-away point is at **1 point**

- 1.87
- 0.31
- 1.56
- 5.87

No, the answer is incorrect.
Score: 0

Accepted Answers:
-1.87

10) In problem 7, the value of K at the break-away point is **1 point**

- 0.1
- 0.25
- 1.65
- 14.5

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.25

11) In problem 7, the break-in point is at **1 point**

- 1.87
- 0.31
- 1.56
- 5.87

No, the answer is incorrect.
Score: 0

Accepted Answers:
5.87

12) In problem 7, the value of K at the break-in point is **1 point**

- 0.1
- 0.54
- 2.25

15.7

No, the answer is incorrect.
Score: 0

Accepted Answers:
15.7

13) In problem 7, the cross-over points are at

1 point

- $j, -j$
 $1.5j, -1.5j$
 $2.65j, -2.65j$
 $3.32j, -3.32j$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $3.32j, -3.32j$

14) In problem 7, the value of K at the cross-over points is

1 point

- 2
 4
 6
 10

No, the answer is incorrect.
Score: 0

Accepted Answers:
4

15) The closed loop system of problem 7 is stable for all

1 point

- $K > 0$

 $K > 2$

 $K < 4$

 $K < 8$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $K < 4$