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Unit 11 - Week 9

Assignment 9

The due date for submitting this assignment has passed. **Due on 2019-10-02, 23:59 IST.**
As per our records you have not submitted this assignment.

1) In the y-axis of the magnitude plot of the Bode plot, the magnitude of the sinusoidal transfer function P(*jω*) is expressed as ***1 point***

- $log_{10}|P(j\omega)|$
- $20\ log_{10}|P(j\omega)|$
- $10\ log_{10}|P(j\omega)|$
- $2\ log_{10}|P(j\omega)|$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$20\ log_{10}|P(j\omega)|$

2) Which ONE of the following is NOT CORRECT about using a logarithmic scale for plotting frequency in the Bode plot? ***1 point***

- A larger range of frequency can be represented
- The lower frequency ranges can be expanded
- Zero frequency can be represented
- If point C is exactly halfway between points A and B, the value of frequency at point C is the geometric mean of the corresponding values at points A and B

No, the answer is incorrect.
Score: 0
Accepted Answers:
Zero frequency can be represented

3) If a plant transfer function is expressed as $\frac{f(s)}{g(s)}$ the magnitude (in dB) of the plant sinusoidal transfer function is ***1 point***

- $log_{10}|f(j\omega)| + log_{10}|g(j\omega)|$
- $20\ log_{10}|f(j\omega)| + 20\ log_{10}|g(j\omega)|$
- $log_{10}|f(j\omega)| - log_{10}|g(j\omega)|$
- $20\ log_{10}|f(j\omega)| - 20\ log_{10}|g(j\omega)|$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$20\ log_{10}|f(j\omega)| - 20\ log_{10}|g(j\omega)|$

4) In problem 3, the phase (in °) of the plant sinusoidal transfer function is ***1 point***

- $log_{10}(\angle f(j\omega)) + log_{10}(\angle g(j\omega))$
- $log_{10}(\angle f(j\omega)) - log_{10}(\angle g(j\omega))$
- $\angle f(j\omega) - \angle g(j\omega)$
- $\angle f(j\omega) + \angle g(j\omega)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\angle f(j\omega) - \angle g(j\omega)$

5) Consider P(s) = 10. Then, the magnitude (in dB) and phase (in °) of the corresponding sinusoidal transfer function are respectively **1 point**

- 20 and 180
- -20 and 0
- 20 and 0
- -20 and 180

No, the answer is incorrect.
Score: 0
Accepted Answers:
20 and 0

6) The slope of the magnitude plot (in dB/octave) of $\frac{1}{j\omega}$ is **1 point**

- 20
- -20
- 6
- -6

No, the answer is incorrect.
Score: 0
Accepted Answers:
-6

7) The corner frequency (in rad/s) of the transfer function $\frac{1}{2s+1}$ is **1 point**

- 2
- 1
- 0.5
- 4

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.5

8) The magnitude (in dB) of the sinusoidal transfer function corresponding to problem 7 as the frequency tends to zero is **1 point**

- 2
- 0.5
- 0
- -6

No, the answer is incorrect.
Score: 0
Accepted Answers:
0

9) The phase (in °) of the sinusoidal transfer function corresponding to problem 7) at the corner frequency is **1 point**

- 0
- -45
- -60
- -90

No, the answer is incorrect.
Score: 0
Accepted Answers:
-45

10) The corner frequency (in rad/s) of the transfer function $2s + 4$ is **1 point**

- 2
- 1
- 0.5
- 4

No, the answer is incorrect.
Score: 0
Accepted Answers:
2

11) The magnitude (in dB) of the sinusoidal transfer function corresponding to problem 10) as the frequency tends to zero is **1 point**

- 12
- 0
- 6
- 20

No, the answer is incorrect.
Score: 0

Accepted Answers:
12

12) The phase (in °) of the sinusoidal transfer function corresponding to problem 10) at the corner frequency is **1 point**

- 0
- 45
- 6
- 90

No, the answer is incorrect.
Score: 0
Accepted Answers:
45

13) Consider a plant whose transfer function is $\frac{1}{s^2+3s+9}$ The magnitude (in dB) of the low frequency asymptote in the magnitude plot of the corresponding sinusoidal transfer function is **1 point**

- -12
- -19.1
- -6
- -9

No, the answer is incorrect.
Score: 0
Accepted Answers:
-19.1

14) In problem 13, the corner frequency (in rad/s) of the sinusoidal transfer function is **1 point**

- 1
- 2
- 3
- 0.5

No, the answer is incorrect.
Score: 0
Accepted Answers:
3

15) In problem 13, the resonant frequency (in rad/s) of the sinusoidal transfer function is **1 point**

- 2.12
- 2
- 3
- 1.732

No, the answer is incorrect.
Score: 0
Accepted Answers:
2.12

16) Consider system 1 and system 2 whose plant transfer functions are respectively $\frac{s+2}{s+1}$ and $\frac{2-s}{s+1}$ Which ONE of the following statements is FALSE about the corresponding sinusoidal transfer functions? **1 point**

- The high frequency magnitude value of the sinusoidal transfer function of system 1 tends to 0 dB
- The high frequency magnitude value of the sinusoidal transfer function of system 2 tends to 0 dB
- The high frequency phase value of the sinusoidal transfer function of system 1 tends to 0°
- The high frequency phase value of the sinusoidal transfer function of system 2 tends to 0°

No, the answer is incorrect.
Score: 0
Accepted Answers:
The high frequency phase value of the sinusoidal transfer function of system 2 tends to 0°