Assignment 9

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

Due on 2019-10-02, 23:59 IST.

1) In the y-axis of the magnitude plot of the Bode plot, the magnitude of the sinusoidal transfer function \( P(j\omega) \) is expressed as

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

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

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

- 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:

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

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

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

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

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

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

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

- 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

- 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 \( \frac{1}{2j + 1} \) is

- 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

- 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

- 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 \( 2j + 4 \) is

- 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

- 12
- 0
- 6
- 20

No, the answer is incorrect.
Score: 0

\[ \angle f(j\omega) - \angle g(j\omega) \]
12) The phase (in °) of the sinusoidal transfer function corresponding to problem 10) at the corner frequency is

- 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

- 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
- 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

- 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

\[ \frac{s + 2}{s + 1} \quad \text{and} \quad \frac{2 - s}{s + 1} \]

Which ONE of the following statements is FALSE about the corresponding sinusoidal transfer functions?

- 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°