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Unit 4 - Week 2

Assignment 2

The due date for submitting this assignment has passed. **Due on 2019-08-21, 23:59 IST.**
As per our records you have not submitted this assignment.

1) The response of a system to an external input is called *1 point*

- forced response
- transient response
- free response
- steady state response

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

2) A second order system is governed by $\ddot{y}(t) - 2\dot{y}(t) = u(t)$. Its transfer function is *1 point*

- $\frac{1}{s^2 + 2}$
- $\frac{1}{s^2 - 2}$
- $\frac{1}{s^2 - 2s}$
- $\frac{1}{s^2 - 2s + 2}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{s^2 - 2s}$

3) The transfer function of a causal system/plant is *1 point*

- proper
- linear
- improper
- non-unique

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

4) The poles of the transfer function of the system whose governing equation is $\ddot{y}(t) - 3\dot{y}(t) - 4y(t) = \ddot{u}(t) + 2\dot{u}(t) + 2u(t)$, are *1 point*

- -1, -3
- 1, 3
- 1, -4
- -1, 4

No, the answer is incorrect.
Score: 0
Accepted Answers:
-1, 4

5) The zeros of the transfer function of the system whose governing equation is $\ddot{y}(t) - 3\dot{y}(t) - 4y(t) = \ddot{u}(t) + 2\dot{u}(t) + 2u(t)$, are **1 point**

- 2, -1
- -2, 1
- -1+j, -1-j
- -2+j, -2-j

No, the answer is incorrect.
Score: 0
Accepted Answers:
-1+j, -1-j

Questions 6-8: Calculate the expression for the unit step response of the system whose governing equation is $\ddot{y}(t) + 6\dot{y}(t) + 5y(t) = u(t)$.

6) The steady state value of the output (as time tends to infinity) is **1 point**

- 1
- 0.5
- 0.2
- 0.1

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.2

7) The coefficient of the e^{-t} term in the output function is **1 point**

- 0.25
- -0.25
- 0.5
- -0.5

No, the answer is incorrect.
Score: 0
Accepted Answers:
-0.25

8) The coefficient of the e^{-5t} term in the output function is **1 point**

- 0.05
- 0.25
- 0.5
- 1

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.05

Questions 9-10: Calculate the unit step response of the system whose governing equation is $\ddot{y}(t) + 5\dot{y}(t) = u(t)$.

9) The steady state value of the output (as time tends to infinity) is **1 point**

- 1
- 0.5
- 0.2
- infinity

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

10) The coefficient of the e^{-5t} term in the output function is **1 point**

- 0.2
- -0.2
- 0.04
- 0.25

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.04

11) Consider the system whose governing equation is $\ddot{y}(t) + 4y(t) = u(t)$, The input for which the system output would be unbounded is **1 point**

- 1
- sin(2t)
- cos(√2t)
- sin(t)

No, the answer is incorrect.
Score: 0
Accepted Answers:
sin(2t)

12) Consider the system whose governing equation is $\ddot{y}(t) + 3\dot{y}(t) = u(t)$, The input for which the system output would be unbounded is **1 point**

- 1
- cos(3t)
- sin(√3t)
- cos(t)

No, the answer is incorrect.
Score: 0
Accepted Answers:
1

13) Consider the system whose governing equation is $\dddot{y}(t) + 4\ddot{y}(t) + 4y(t) = u(t)$. The system output would be unbounded for **1 point**

- only u(t)=1
- only u(t)=cos(2t)
- any bounded input
- only u(t)=cos(4t)

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

14) Consider the system whose governing equation is $\ddot{y}(t) + 2\dot{y}(t) - 3y(t) = u(t)$, The system output would be unbounded for **1 point**

- only u(t)=1
- only u(t)=cos(3t)
- any bounded input
- only u(t)=sin(t)

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

15) Consider the system whose governing equation is $\dddot{y}(t) + 8\ddot{y}(t) + 22\ddot{y}(t) + 24\dot{y}(t) + 9y(t) = u(t)$. Which ONE of the following statements is TRUE? **1 point**

- The multiplicity of the -1 pole and -3 pole is 1 and 2 respectively
- The multiplicity of the -1 pole and -3 pole is 2 and 1 respectively
- The multiplicity of the -1 pole and -3 pole is 1 and 1 respectively
- The multiplicity of the -1 pole and -3 pole is 2 and 2 respectively

No, the answer is incorrect.
Score: 0
Accepted Answers:
The multiplicity of the -1 pole and -3 pole is 2 and 2 respectively