Quizzes of TTK4225 - Systems Theory, Autumn 2020

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Question 85

To compute the transfer function of a LTI system one has necessarily to pass through Laplace-transforming its impulse response

1. true
2. false
3. it depends on the system
4. I do not know

Question 86

Compute the transfer function of the system $\ddot{x} = a_1\dot{x} + a_0x + u$

Question 87

Compute the gain of the system $\ddot{x} = a_1\dot{x} + a_0 x + u$

Question 88

Compute $\lim\limits_{t \to +\infty} x(t)$ where $x(t)$ is the trajectory of the system $\ddot{x} = a_1\dot{x} + a_0x + u$
corresponding to null initial conditions and $u(t > 0) = t$, 0 otherwise

Question 89

The number of different types of modes in a system is . . .

1. equal to the number of zeros of the transfer function
2. at most equal to the number of zeros of the transfer function
3. equal to the number of poles of the transfer function
4. at most equal to the number of poles of the transfer function
5. I do not know

Question 90

Every LTI system has a rational transfer function

1. true
2. false
3. it depends on the system
4. I do not know

Question 91

The zeros of a transfer function affect the stability properties of that system

1. true
2. false
3. it depends on the system
4. I do not know

Question 92

The zeros of a transfer function affect the transient of the step response of that system

1. true
2. false
3. it depends on the system
4. I do not know

Question 93

When designing a LTI controller, it may be meaningful to design the zeros of a transfer function so to improve the overall response of the closed-loop system

1. true
2. false
3. it depends on the system
4. I do not know

Question 94

The convolution of a rectangular signal with itself leads to . . .

1. another rectangle
2. a triangle
3. a trapezoid
4. it depends on the length of the rectangle
5. I do not know

Question 95

Convolution is a nonlinear operator

1. true
2. false
3. it depends on the actual signals that are convolved
4. I do not know