TECHNICKÁ UNIVERZITA V KOŠICIACH
Strojnícka fakulta

**Ústav automatizácie, mechatroniky, robotiky
a výrobnej techniky
Katedra mechatroniky**
Park Komenského 8 | 042 00 Košice

Questions for state exams in the subject: Design of mechatronic systems
Study program: Industrial mechatronics   **AR: 2020/2021**

1. Example of Application of a Modern Control System, Basic Operations of Block Algebra and Possibilities of Block Diagram Editing.

2. Stability of the system and Types of Stability Criteria.

3. Nyquist Polar Plot of Second Order System $G(s) = \dfrac{1}{(1 + sT_1)(1 + sT_2)}$

4. The Nyquist Stability Criterion.

5. The Rouths Stability Criterion.

6. Gain and Phase Margin in the Bode Diagram.

7. PID Control.

8. Ziegler and Nichols Control Method.

9. Local Coordination Frame, Global Coordination Frame, Rotation about Global Cartesian Axes, Euler angles.

10. Rigid Body Motion

11. Homogenous Transformation

12. Forward Kinemaics and Denavit – Hartenberg Notation

13. Inverse Kinematics of an Articulated Robot.

14. Forward Velocity Kinematics.

15. Jacobian Matrix for an Articulated Robot.

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