EXAMINATION QUESTIONARY

"System analisys", school year: **2023-2024**

1. Introduction to the course in System analisys. General information about control systems. Main tasks of automation. Basic concepts and definitions. Examples of control systems.

2. Classification of control systems. A simple feedback system. Feedback control. Optimal, adaptive, robust and intelligent control.

3. Functional structure of control systems. Basic functional elements of control systems.

4. Closed-loop behaviour of control systems. Control strategies. Examples.

5. Static characteristics and dynamic responses of elements and control systems. General form of linear differential equations. The Laplace transform. Transfer function and block diagram.

6. Block diagram transformation. Formulas for block connections. Rules for equivalent block diagram transformations.

7. Standard dynamic elements and pure time-delay element - mathematical description. Time and frequency responses of standard dynamic elements. Examples.

8. Stability. Conditions for stability of linear system. Concept of stability. Necessary condition for stability. Algebraic and frequency domain criteria for checking stability of closed-loop systems .

9. Effect of pole locations. The time-domain specifications. Integral criteria.

10. An outline of control systems design. Control of dynamic error. P-, PI- and PID- control. Two positions control.

11. Programmable logic controllers.

12. Control of dynamic error. P-, PI- and PID- control. Two positions control.

Lecturer: ………………………………

/Associate professor M. Todorova/