

Lista zagadnień na egzamin dyplomowy

Kierunek studiów:	Automatyka i Robotyka	Stopień studiów:	pierwszy
Specjalność:	Robotyka		

Nr	Zagadnienie
1	Ways to pass arguments to functions in C++. [Information engineering]
2	The role of the IP address in network communication. [Information engineering]
3	Basic laws of electrical engineering. [Electrical engineering]
4	Conservation laws in physics. [Physics]
5	Basics of wave optics (interference, diffraction, polarization). [Physics]
6	Normal stress - strength criterion, allowable stress, and factor of safety. [Theoretical mechanics and mechanics of materials]
7	Parameters of random signals. [Signals and dynamic systems]
8	Fourier transformation - its physical meaning and properties. [Signals and dynamic systems]
9	Controllers and control performance in a closed-loop system. [Automatic control]
10	Stability of linear continuous-time systems. [Automatic control]
11	Modelling of dynamical systems in discrete-time. [Automatic control]
12	Programming model for real-time systems. [Real-time systems]
13	Process synchronization and communication mechanisms. [Real-time systems]
14	Measurement uncertainty. [Metrology]
15	Sensors and transducers of non-electrical quantities. [Metrology]
16	Software and hardware implementation of combinational circuits. Minimization of logical expressions. [Microprocessor systems]
17	Software and hardware implementation, incl. multiplexers, demultiplexers, flip-flops and memory; software and hardware implementation of sequential circuits. [Microprocessor systems]
18	Peripheral systems (GPIO, TIM, ADC, DAC) of the microcontroller, their operation and hardware interfaces. [Microprocessor systems]
19	Direct and Inverse kinematics of robot manipulators. [Robotics]
20	Classification of methods for solving inverse kinematics of robot manipulators. [Robotics]
21	Robot manipulator dynamics model. [Robotics]
22	Robot control methods. [Robotics]
23	Hybrid force/position control of robots. [Robotics]
24	Design and manufacturing process of the Printed Circuit Board (from concept to manufacturing, assembly and testing). [Electronical and electrical circuits designing]
25	Basic system identification methods for ARX and OE structures (including model order estimation). [System identification]
26	Identifiability and parameter estimation in a closed-loop system. [System identification]
27	Determining models in the state space. [Control theory]
28	State observers. [Control theory]
29	Principle of operation of basic functional blocks of programmable controllers, timers and counters. [Digital controllers and PLC]
30	Cycle of operation of a programmable controller. [Digital controllers and PLC]
31	Communication mechanisms between nodes in Robot Operating System. [Tools and software for robotic systems]
32	Scientific libraries available in Python. Describe at least two of them. [Tools and software for robotic systems]
33	Components of multi-rotor flying platforms. [Flying robots]
34	Components of control algorithms of flying robots. [Flying robots]
35	Mechanical joints in machine design. [Mechanical constructions]
36	Motion commands of robot manipulators and their parameters. [Robot programming and task planning]
37	Kinematic singularities of robot manipulators. [Robot programming and task planning]
38	The purpose and limitations of using motion commands with approximate positioning. [Robot programming and task planning]
39	Tool calibration methods and their parameters. [Robot programming and task planning]

