**Program** **of the**

**final control of the course** « Software Scada »

 **for the 2020-2021 academic year**

**Faculty of *Information Technology***

**Department** Artificial Intelligence and Big Data

**Code and name of the educational program:**

**Discipline name:** \_\_\_« Software Scada »

***Course*** \_3

**Lecturer: Dzhamanshalov Muratbek**

**The form** of the final control of the academic discipline - test

**Platform:** СДО Moodle.

**Control of passing testing -** online proctoring.

Proctoring technology (in english *«proctor»* - *means to control the course of the exam*). The proctors, as in the usual exam in the classroom, make sure that the examinees pass the test honestly: they complete the assignments on their own and do not use additional materials. Both a specialist (full-time proctoring) and a program that controls the test subject's desktop, the number of faces in the frame, extraneous sounds or voices, and even gaze movements (cyber proctoring) can monitor the online exam in real time via a webcam. A type of mixed proctoring is often used: a video recording of an exam with program comments is additionally viewed by a person and decides whether violations have actually taken place.

Each student must necessarily familiarize himself with and confirm in the chat that he is familiar with the schedule, rules, with the requirements of the proctoring instruction

***Test duration*** - 60 minutes for 25 questions, 1 attempt.

***Number of test questions***: **25**

### **EXAM PROCEDURE**

IMPORTANT - the exam is held on schedule

30 minutes before the start, students must prepare for the exam in accordance with the requirements of the proctoring instruction.

### Test results can be revised based on proctoring results. If a student violated the rules for passing the test, his result will be canceled.

**Topics for which the exam questions were drawn up (program)**

1 Scripting the automation workflow

2.Hardware of SCADA-systems

 3.Creating a project in SCADA - WINCC system

4. Realization of control systems based on programmable logic controllers 5.Control of automatic cycles

 6.Control programs for CNC machines

7.Automation of individual machines

8. Classification of software for process control systems.

9. Real-time operating systems.

10. Characteristics of the applied software

. 11. Functions of the SCADA software. Operator functions.

12. Architectural construction of SCADA systems. Client-server. SCADA as an open system. Features of open systems. OPC interface.

13. Methods for organizing access to SCADA applications.

 14. Architecture "terminal - server". 1

15. Methods of organizing access to SCADA applications. SCADA and the Internet. Reliability of SCADA systems. Reservation.

16. Graphic capabilities.

17. Hardware SCADA-systems

 18.Factors that led to the formation of the modern market for funds and automation systems.

19.Classification of controllers by purpose, examples.

**LIST OF RECOMMENDED LITERATURE**

1. **1.** Губанова А.А,Создание проекта в Scada системеWinCC. – Учебно-методическое пособие, 2019 - 35 с.
2. Гольцев В.А, МичковА. Н.: Изучение Scada системыWinCC V6: Методическое указание к лабораторной работе. !5. УрФУ, 2011 - 17 с.
3. Федорович О. Е. Прохоров А.В. Системы промышленной автоматизации на основе технологии Scada. Учебное пособие по лабораторному практикуму- 6-е изд. – Харьков ХАИ, 2007-126 с.
4. Андреева Е.Б. Современные технологии автоматизации. Курс лекции издание - М .: Издательство «Ви-Лиамс», 2011 - 736 с.

**Assessment criteria (Assessment scale):**

|  |  |  |  |
| --- | --- | --- | --- |
| "excellent" - | А | 4,0 | 95-100 |
| А- | 3,67 | 90-94 |
| "good" -  | В+ | 3,33 | 85-89 |
| В | 3,0 | 80-84 |
| В- | 2,67 | 75-79 |
| С+ | 2,33 | 70-74 |
| "satisfactory" -  | С | 2,0 | 65-69 |
| С- | 1,67 | 60-64 |
| D+ | 1,33 | 55-59 |
| D- | 1,0 | 50-54 |
| "unsatisfactory" -  | FX | 0,5 | 25-49 |
| F | 0 | 0-24 |