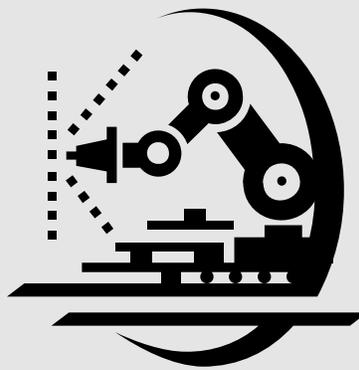


GENERAL INSTRUCTIONS  
AND  
AGENDA



STATE  
ROBOTICS AND AUTOMATION

INSTRUCTIONS

OPEN THIS BOOKLET IMMEDIATELY  
AND READ THE INSTRUCTIONS  
THOROUGHLY.

## SAFETY INSTRUCTIONS

You ***MUST*** wear eye protection at all times while in the contest area. Use caution when working to reduce the risk of injury to yourself and others. Failure to wear your eye protection and work safely as required will reduce your contest score by 10 points.

## CONTEST DESCRIPTION

The contest consists of FOUR (4) parts. Each part is timed. You will be told when you begin each job how much time is allowed. You must stop work immediately when told to do so. Failure to stop immediately may result in disqualification, at the Judges option. Highlighted items will be taken on-line prior to coming to the conference.

### **PART ONE, WRITTEN PDP TEST** **Tie Breaker** **15 Minutes**

You will be required to complete a TWENTY question, multiple-choice test covering SkillsUSA knowledge.

### **PART TWO, WRITTEN TECHNICAL TEST** **20 PERCENT** **1 HOUR**

You will be required to complete a FIFTY question, multiple-choice test covering aspects of electricity, electronics, mechanics, fluid power, motors and controls, robotics and automation-related problems.

### **PART THREE, OPERATION** **60 PERCENT** **4 HOURS**

Given a problem statement, you will be required to design, build and program a flexible-manufacturing cell that will manipulate parts in accordance with customer requirements. You will be graded on your knowledge and efficiency in solving the problem, including the inclusion of specific safety features, programmed decision making, configuring sensors to detect various materials and whether or not certain processes have been performed on the object to be manipulated, and document your final product.

### **PART FOUR, DOCUMENTATION** **20 PERCENT** **INCLUDED**

You will be required to produce a copy of all system documentation, including ladder diagrams, flowcharts, system settings as well as a short explanation of the operation of the workcell. This explanation must include descriptions of the devices used, provisions for any unusual circumstances, and the work envelope of each device used. You will write a short instruction manual outlining the steps of operation of the cell for an operator who is presumed unfamiliar with the devices you have used. This should include safety statements, a problem description, equipment descriptions, and operation description with your instructions. You will be required to document all steps of your development. You may receive credit for this work even if you cannot get the cell to work properly. You will be scored on use of standard industry notation, sequencing of your solution, provision for unusual scenarios, accuracy, clarity, and inclusion of technical elements outlined above.

**PART FIVE, RESUME****Part of Skills****N/A**

You will be required to present a resume to the judges upon entering the contest area. A deduction to your total score will be applied if you do not have a resume.

**TIE BREAKERS:** In the event of a tie, the tie will be broken by the high score on the following: (in order) Operation, Documentation, and Written Technical Test.

### GENERAL INSTRUCTIONS

1. You should read the instructions on the front of each section of the contest carefully. Wait until the judges tell you to begin. Further instructions are inside each test. Read these carefully, all the way through, before beginning.
2. Make sure you have completed all parts of each section before stopping. It never hurts to read the instructions again after you have finished to see if you remember doing everything.
3. The Robotics and Automation contest will test your ability to:
  - Understand written instructions.
  - Conceptualize a problem statement.
  - Design a flow chart for the operation of an automated manufacturing workcell when given a scenario of the required tasks.
  - Adhere to industry safety standards concerning the use of automation.
  - Design the most efficient program using the least number of logical components.
  - Use manufacturing automation software to integrate various automated devices into a cell to perform an assigned task.
  - Document your work, including flow chart, ladder diagram, and brief set of operator instructions/program operation description.
  - The judges will help you only by clarifying the problem. You should not expect the judges to be familiar with all makes of PLC's, Robots, or controllers or to help you solve the problem. However, your score will not be reduced for asking questions. The judges will tell you if you have asked for information they cannot give you.
4. **Judges devote their time and, in many cases, money to see that the contest is successful.** While every effort is made before the contest to see that all contingencies are covered, some still may occur. That is why **the judges decisions, in all cases, are final.**
5. Please follow all rules of the contest. You are all here in a spirit of **honest** competition. If you observe a contestant breaking a rule, please bring the infraction to the attention of a judge immediately. They cannot be everywhere at once. You may file a grievance after the contest if you feel something is out of order, but in most cases, to be effective, the infraction must have been brought to the attention of the judges during the contest. They will usually take action immediately to correct the situation.
6. **We all want to have a good time, play fair, and go home happy.**
7. **If you compete fairly, honestly, and give it your best shot, you are a winner.**