

2010 SkillsUSA State Championship Electronics Technology

Dear Instructors and Students:

Northrop Grumman Corporation is excited to host the 37th SkillsUSA Maryland Electronics Technology competition on Saturday, March 27, 2010.

Our electronics training facility has two soldering labs, a classroom with computer workstations, and a classroom with nine NIDA testing stations. Equipment in the NIDA lab that will be used to align/tune and troubleshoot a 3-board set includes the following:

- NIDA Corporation Model 130E Trainer
- Fluke digital multimeter 87 III with frequency counter and automatic ranging
- Basic oscilloscope

All computers are Windows-based PCs.

The Electronics Technology competition will consist of the following:

- Follow a written set of instructions to align and tune a working circuit. The exercise will require setting two power supply voltages, tuning an RF Oscillator circuit, setting a Hi/Lo threshold level in a comparator circuit, setting two RF Bandpass Filter circuits, and setting two level-detect threshold circuits. Contestants will be given a schematic.
- Troubleshoot 6 faults that are programmed into the board set used in the tuning exercise.
- Take a written test on DC, AC, analog and digital devices. Topics include the following:
 - Series and Parallel circuits and troubleshooting theory
 - Kirchoff's voltage and current laws
 - Norton's and Thevenin's theorems
 - Sinusoidal and Non-sinusoidal waves
 - RL series and parallel circuits
 - RC series and parallel circuits
 - RL and RC filters
 - RC time constants
 - RLC circuits
 - Series and parallel resonance
 - Transformer Operation
 - Diodes and diode circuits
 - Transistor circuits
 - Power supplies
 - Transistor amplifiers
 - Transistor oscillators
 - Operational amplifiers

All questions come from basic electronic principles that can be found in any electronics textbook. All questions are multiple-choice. All formulas and truth tables will be provided.

- Partial platform build: Contestants should know how to interpret a drawing that includes a wire tabulation table and be able to perform basic J-std soldering to Class 2. All tools and supplies will be provided.

Students should bring a pencil.

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