

2012 – Post Secondary Electronics - Competition Scope

NSCC Pictou Campus – March 22, 2012

Duration of Contest: 5 hrs.

PURPOSE OF THE CHALLENGE

To evaluate each competitor's skills and to recognize outstanding students for excellence and professionalism in the field of Electronics Technology.

SKILLS AND KNOWLEDGE TO BE TESTED

Theory 20% Practical 80%

The contest will cover the theoretical and practical aspects of current state of the art electronic industry standards. The competitor may be asked to demonstrate abilities in the following areas:

- Interpret electronic schematic diagrams, pictorials, manufacturers technical specifications and suppliers' catalogues.
- Identify common electrical and electronic components.
- Construct, analyze and troubleshoot circuits including series resistance, parallel resistance, series-parallel resistance and solid state switching circuits.
- Construct, analyze and troubleshoot AC circuits including capacitive, inductive and complex RLC circuits.
- Construct, analyze and troubleshoot analog circuits including discrete amplifiers, operational amplifiers and comparator circuits.
- Construct, analyze and troubleshoot digital circuits including TTL/CMOS gates, timers and optical devices
- Hand-solder through-hole mount components on a printed circuit board to acceptable industry standards.
- Hand-desolder through-hole mount components on a printed circuit board.
- Set-up and demonstrate use of common electronic measuring equipment including multimeters, power supplies, frequency generator and oscilloscope.
- Troubleshoot simple electronic circuits having a preinstalled fault.
- Reverse engineer an electronic circuit.

EQUIPMENT, TOOLS, SUPPLIES, CLOTHING

Competitors are to be dressed in a clean and safe manner. They should not wear jewelry on hands or wrists.

Provided by Pictou Campus:

- Bench equipment:
 - Minimum 40MHz, 2 channel Oscilloscope and 10X probes
 - Waveform Generator
 - Dual Power Supply 0 to +/- 15 Volts @ 1 amp minimum
 - Digital Multimeter
- Project supplies, components and documentation specific to the competition
- PACE Soldering Station with attachments (lead-free)
- "Third Hand".

Note: Competitors may choose to supply and use their own equipment in place of that provided by the campus as long as this does not result in an unfair advantage over others (as determined by the judges).

Provided by the competitor:

The competition judges will inspect tools for suitability prior to the competition.

- Long nose pliers
- Side Cutters
- Wire Stripper
- Screwdrivers
- Magnifying Glass (if desired)
- Pens, Pencils, Eraser, Ruler
- Safety Glasses with side shields or Goggles
- 2 breadboards, minimum size each, 2"x 6" (wire will be supplied)
- Calculator. Programmable calculators may be reset if judges feel that a competitor has an unfair advantage over others.

ADDITIONAL COMPETITION NOTES

It is the responsibility of each competitor to supply the aforementioned tools and supplies. **Failure to supply the required tools and supplies may result in competitor not being allowed to participate.**

Safety glasses with side shields or goggles must be worn when soldering or desoldering. **Failure to comply with this regulation may result in disqualification from the competition at the discretion of the judges.**

In the event of a final evaluation showing a difference of less than 2%, the placement will be determined by the mark achieved on the following project sections:

- o First determinant – reverse engineering.
- o Second determinant – troubleshooting.
- o Third determinant – theory test.

Competition documents will be available to the competitor only at the time of competition.

Standards used at the International Competitions may be of interest to competitors. See the trade 16 scope and documents at: www.worldskills.org

Maximum number of competitors – 15.