

13th PROVINCIAL SKILLS COMPETITION
2010 Skills Canada Newfoundland and Labrador



16
ELECTRONICS
Scope Document
Post-Secondary
Friday, March 26th College of the North Atlantic, Ridge Rd. Campus - St. John's
Note : One competitor per registered school

Duration of Contest: Approximately 6 hrs.

PURPOSE OF THE CHALLENGE

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

SKILLS AND KNOWLEDGE TO BE TESTED

Theory 15% Practical 85%

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 any of the following areas:

- Interpret electronic schematic diagrams, pictorials, manufacturer's technical specifications and supplier catalogues.
- Identify common electrical and electronic components.
- Construct, analyse and troubleshoot DC circuits including series resistance, series-parallel resistance and solid state switching circuits.
- Construct, analyse and troubleshoot AC circuits including capacitive, inductive and complex RLC circuits.
- Construct, analyse and troubleshoot analog circuits including discrete amplifiers, operational amplifiers and comparator circuits
- Construct, analyse and troubleshoot digital circuits including TTL/CMOS gates, timers and optical devices.
- Hand solder components on a printed circuit board to acceptable industry standards.
- Hand de-solder through-hole mount components on a printed circuit board.

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- Set-up and demonstrate the use of common electronic measuring equipment, such as an oscilloscope, multimeters, power supplies, function generator(s), and/or frequency counter(s)
- Troubleshoot simple electronic circuits which have a preinstalled fault.
- Reverse Engineer a simple electronic circuit.

EQUIPMENT, TOOLS, SUPPLIES, CLOTHING

Competitors are to be dressed in a clean and safe manner.
No jewellery on hands or wrists. No programmable calculator.

Competitors will be allowed to listen to music from a personal CD or Tape player during the competition. Only original recordings will be acceptable.

Provided by the organization

- Bench equipment:
 - Minimum 40MHz, 2 channel Oscilloscope and 1/10X probes
 - Function Generator 0 to 2 MHz
 - Dual Power Supply 0 to +/- 25 Volts @ 0.5 amp
 - Digital Multimeter
 - Frequency counter (optional)
- Projects and Documentation:
 - Supplied by the organization.
- Hand Tools:
 - 25 watt Solder Iron, Stand, Tip cleaner, tips of choice. Butane solder devices will not be allowed.
 - Hand vacuum extractor or Solder Wick
 - Long nose pliers
 - Side Cutters
 - Wire Stripper
 - Screwdrivers; Slot, Philips, Robertson
 - "Third Hand" including magnifying glass.
- Miscellaneous:
 - Safety Glasses/Goggles
 - 2 breadboards, minimum size each, 2"x 6". (wire will be supplied)
 - Hearing protection to block out some of the noise from other competition

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POINT BREAKDOWN

The following descriptors will be used:

Perfect	=	10
Very Good	=	9
Good	=	8
Rather Good	=	7
Sufficient	=	6
Medium	=	5
Weak	=	4
Insufficient	=	3
Bad	=	2
Very Bad	=	1
Zero	=	0

ADDITIONAL COMPETITION NOTES:

- In the event of a tie in the evaluation, the tie will be broken by the mark achieved on the following project sections: (in order of importance)
 - Construction project
 - Troubleshooting assignment
 - Reverse engineering assignment
- Current competition documents will be available to the competitor only at the time of competition.
- Safety glass must be worn for the soldering/desoldering project. Failure to comply with the PTC members may result in disqualification from the competition at the discretion of the PTC members on site.

Standards used at the National Competitions may be of interest to competitors. See the trade 16 scope and documents at:

http://www.skillscanada.com/index.php?option=com_content&task=view&id=183&Itemid=224

PROVINCIAL TECHNICAL COMMITTEE

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