



## 2018 21st ANNUAL SKILLS MANITOBA COMPETITION CONTEST DESCRIPTION

**CONTEST NAME:** Electronics

**CONTEST NO:** 16

**CATEGORY:** Secondary and Post-Secondary – Maximum 12 competitors

**CONTEST LOCATION:** Manitoba Institute of Trades and Technology – 7 Fultz – ACDC lab

**CONTEST START TIME AND DURATION:**  
8:30 am start time – approximately 1:00 pm

**PURPOSE OF 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:**

The contest will cover the theoretical (**20 %**) and practical (**80%**) 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, manufacturer's technical specifications and supplier catalogues.
- Identify common electrical and electronic components.
- Analyze and troubleshoot **basic** analog electronic circuits, including **circuits with discrete components such as diodes, transistors and circuits such as rectifier circuits. This will be in the theory test only.**
- Analyze digital circuits, including TTL/CMOS gates, timers and optical devices.
- Hand solder components on a printed circuit board to acceptable industry standards. **Students will solder a LED flasher circuit and a DIP package.**
- **Students will have to bread board three circuits: A bipolar power supply using 78xx and 79xx voltage regulators, a LED flasher circuit, and a digital**

**circuit using typical logical gates. Students will be trained on how to use the digital trainer.**

- Hand de-solder through hole mount components on a printed circuit board.
- Reverse Engineer a simple electronic circuit.
- Use DMM to test solid state components.
- **Theory test is worth 20% will cover basic solid states components such as diodes, rectifiers, transistors and basic digital circuits.**

#### **POINT BREAKDOWN / 1000 TOTAL:**

Theory – 20%

Practical – 80%

#### **NATIONAL COMPETITION ELIGIBILITY:**

- A mark of **70% or higher** must be scored by the gold medalist in each contest in order for them to attend the National Skills Competition

#### **EQUIPMENT, TOOLS, MATERIALS TO BE PROVIDED BY COMMITTEE:**

All equipment/materials required for contest, but not supplied by competitor.

#### **EQUIPMENT, TOOLS, MATERIALS TO BE SUPPLIED BY COMPETITOR:**

##### **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
- “Third Hand” including magnifying glass
- Power bar, 4 or more outlet
- **Extra equipment will be available if needed**
- **Students will be provided with instruction on any test equipment being used.**

**Technical Committee will inspect other tools for suitability.**

##### **Miscellaneous:**

- Pens, pencils, eraser, ruler
- Safety Glasses/Goggles
- 2 breadboards, minimum size each 2” x 6” (wire will be supplied)
- Desk Lamp (optional)
- No programmable calculator
- Hearing protection to block out some of the noise from other contests

#### **WORKSITE SAFETY RULES / REQUIREMENTS:**

Competitors are to be dressed in a clean and safe manner (no jewelry on hands or wrists).

Safety glasses must be worn for the soldering/desoldering project. Failure to comply with Tech Committee Members may result in disqualification from the competition at the discretion of the Committee.

**SPECIAL CONDITIONS / ADDITIONAL INFORMATION:**

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

**THE IMPORTANCE OF ESSENTIAL SKILLS FOR CAREERS IN THE SKILLED TRADES;**

Essential skills are used in nearly every job and at different levels of complexity. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change. Good Essential Skills means you will understand and remember concepts introduced in technical training. The level of Essential Skills required for most trades is as high as or higher than it is for many office jobs.

The following 9 skills have been identified and validated as key essential skills for the workplace:

Numeracy, Oral Communication, Working with Others, Continuous Learning, Reading Text, Writing, Thinking, Document Use, Digital.

Essential Skills Required for Electronics: Numeracy, Thinking: Critical, Document Use

**TECHNICAL COMMITTEE MEMBERS CONTACT INFORMATION:**

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