

2021 PROVINCIAL SKILLS CANADA COMPETITION



ELECTRONICS PSCC

Additional Information as of April 15th, 2021

Breadboarding

Competitors will be supplied with a schematic diagram and all the components to build it on a breadboard (also provided). Once complete, competitors will record a short video on their phones showing the circuit working as well as a photo of the circuit from directly above.

Assessment criteria:

- Does the circuit work?
- Accuracy relative to the original schematic
- Neatness/Organization (color coding is not required, but consistency is. If you color-code your wires, do it everywhere, otherwise just use a single color of wire)

Soldering

Once the breadboarded task is complete and the video & photo taken, competitors are to transfer the circuit to the provided protoboard. The protoboard has the same form factor and internal connections as the breadboard so this should be a direct transfer, though marks will not be docked if the layout is changed. The soldered circuit will be shipped for judging with the provided shipping box.

Assessment criteria:

- Average solder joint quality
- Consistency
- Does it work?

Circuit Analysis

Competitors will be given a set of circuit analysis/design questions to solve on paper. Topics may include calculating resistance, current and voltage based on a given circuit and designing a simple circuit from a set of specifications. Competitors will need to take a photo of their solutions (including work) for submission.

Assessment Criteria:

- Correctness
- Work shown (for analysis questions)
- Validity of design (for circuit design questions)
- Completeness (for circuit design questions)

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Measurement / Testing - MultiSim

Each competitor will be assigned a 30 minute time slot to meet one-on-one with one of the judges in a WebEx breakout room. Competitors will be provided a file in MultiSim (<https://www.multisim.com/>) and will be asked to complete a series of task and answer questions. Competitors should make sure they have spent some time prior to the event learning the basics of MultiSim including: circuit creation and modification, measuring voltage and current, using the built-in oscilloscope simulator (called Grapher in MultiSim) make inferences from voltage graphs.

Assessment Criteria:

- Understanding of voltage/current and how to measure them
- Logical reasoning and use of measurement tools to solve problems