Skills Compétences Canada
Vancouver2020

CONTEST DESCRIPTION / DESCRIPTION DE CONCOURS

ELECTRONICS

ÉLECTRONIQUE

SECONDARY / NIVEAU SECONDAIRE

SCNC / OCMT
2020
VANCOUVER

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1 THE ESSENTIAL SKILLS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

SCC is currently working with Employment and Social Development Canada (ESDC) in order to bring awareness to the importance of Essential Skills that are absolutely crucial for success in the workforce. Part of this ongoing initiative requires the integration and identification of Essential Skills in contest descriptions, projects, and project documents. The next phase and very important aspect of our Essential Skills (ES) initiative is to provide an ES report card to each competitor at the Skills Canada National Competition. The purpose of the ES report card is to inform the competitor about their current level of essential skills based on their competition scores. With this knowledge, the competitor will be made aware which essential skill may require improvement. Full implementation is expected in the next Skills Canada National Competition.

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

[1]Numeracy, [2]Oral Communication, [3]Working with Others, [4]Continuous Learning, [5]Reading Text, [6]Writing, [7]Thinking, [8]Document Use, [9]Digital, [10]Technical

These essential skills have been identified in section 2.4 and/or 3.2 of your Contest Description and if applicable, in your Project and all other supporting project documents.

2 CONTEST INTRODUCTION

2.1 Description of the associated work role(s) or occupation(s).

http://skillscompetencescanada.com/en/skills/information-technology/electronics/

2.2 Purpose of the Challenge.

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

2.3 Duration of contest.

12 hours

2.4 Skills and Knowledge to be tested.

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.[8]
- Identify common electrical and electronic components. [7]
- Construct, analyze and troubleshoot DC circuits including series resistance, parallel resistance, series-parallel resistance and solid-state switching circuits.[7]
- Construct, analyze and troubleshoot AC circuits including capacitive, inductive and complex RLC circuits[7].
- Construct, analyze and troubleshoot analog circuits including diodes, transistor amplifiers, IC amplifiers, operational amplifiers and comparator circuits. [7]
- Construct, analyze and troubleshoot [7] digital circuits including TTL/CMOS gates, timers and optical devices[9].
- Apply the appropriate test procedures and equipment to a given situation[7]
- Interpret the observed values from the test equipment. (AC/DC voltages, currents and waveforms and circuit resistance)[1]
- Identify basic systems of analog to digital and digital to analog conversion[1]
- Answer questions related to basic electrical/electronic theory

Essential Skills – [1]Numeracy, [7]Thinking (Problem Solving, Critical Thinking, Significant use of Memory), [8]Document Use, [9]Digital,

3 CONTEST DESCRIPTION

3.1 List of documents produced and timeline for when competitors have access to the documents.

DOCUMENT	DATE OF DISTRIBUTION VIA WEBSITE
Declaration of major components used in projects.	March 2020

3.2 Tasks that may be performed during the contest

- Hand - solder through-hole on a printed circuit board to acceptable industry standards.
- Hand – de solder through-hole on a printed circuit board.
- Assemble a circuit from a kit of parts PCB
- Assemble a circuit from a kit of components on a breadboard.
- Set-up and demonstrate use of common electronic measuring equipment including multimeters, power supplies, frequency generators and oscilloscopes.
- Troubleshoot simple electronic circuits having a preinstalled fault and restore to working condition
- Complete circuit analysis on a simple electronic circuit which may include generating a schematic diagram.

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and material provided by Skills/Compétences Canada

- Fluke Scopemeter c/w accessories (minimum 40MHz)
- Fluke Digital Multimeter c/w test leads and temperature probe
- Triple Power Supply fixed 5V@.5amp,0 to +/- 15 Volts @ 1 Amp minimum c/w leads and clips
- Waveform Generator c/w BNC to alligator cables
- Solder will be supplied. No Lead Sn99.3/Cu0.7.
- Project wire
- Projects, electronic components and documentation

4.2 Equipment and material provided by the competitor

- Solder Iron suitable for use with no-lead solder types. Stand, Tip cleaner, tips of choice. Butane solder devices will not be allowed.
- De-Solder braid
- Three sets of test leads ie. banana to alligator, banana to banana and alligator to alligator.
- Hand vacuum solder extractor
- Long nose pliers
- Side Cutters
- Wire Stripper
- Screwdrivers (including precision set)
- “Third Hand” including magnifying glass. (optional)
- Magnifier
- Power bar, 4 or more outlet (3’/1m or more cord length and must be CSA approved
- Pens, Pencils, Eraser, Ruler
- 2 breadboards, minimum size each, 2”x 6” (wire will be supplied)
- Desk Lamp
- Stand-alone calculator (non-programmable i.e. TI-30Xa)

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCC. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA.

4.3 Required clothing provided by the competitor.

- Competitors are to be dressed in a clean and safe manner (long pants and closed toe shoes)
- No jewelry on hands or wrists.

5 SAFETY REQUIREMENTS

5.1 Safety Briefing

Upon arrival at the Skill area, Competitors will participate in a Safety briefing and will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety and environmental rules, may be required to undertake a second safety briefing, this will not affect the Competitor's competition time.

5.2 Personal protective equipment (PPE) provided by Skills/Compétences Canada.

- N/A

5.3 Personal protective equipment (PPE) provided by the competitor.

- Safety Glasses with side shields

6 ASSESSMENT

6.1 Point breakdown

POINT BREAKDOWN	/100
Measurement Technique	15
Assembly and Testing	30
Circuit Analysis	10
Bread boarding Technique	20
Theory and Fault-Finding Technique	15
Rework	10

Note: Additional skills requiring cable assembly may be incorporated into any of these sections

7 CONTEST SPECIFIC RULES

Contest specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from contest to contest. Any additional contest rules will be reviewed during competitor orientation.

TOPIC/TASK	CONTEST SPECIFIC RULE
Safety	Competitors must wear their safety glasses with side shields or goggles when soldering, de-soldering and circuit assembly. Failure to comply with this regulation may result in disqualification from the competition at the discretion of the National Technical Committee (NTC) members on site.
Use of technology - music	Competitors are allowed to listen to music through headphones or earbuds but must be provided by a non-cellular network. The sessions where music is allowed will be determined by the NTC.
Tools/ Infrastructure	Competitors are responsible to supply the aforementioned tools and supplies. Failure to bring the required tools and supplies may result in competitor not being allowed to participate.

8 ADDITIONAL INFORMATION

8.1 Interpreter

If a competitor requires the help of an interpreter once onsite during the competition, the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service might not be guaranteed.

8.2 Ties

- Tiebreaker #1: In the event of a tie, the competitor with the highest score in the Bread boarding project will be declared the winner.
- Tiebreaker #2: If a tie still exists the competitor with the highest mark in the Assembly and Testing project will be declare the winner.
- Tiebreaker #3: If a tie still exists the competitor with the highest mark in the Theory and Fault-Finding project will be declared the winner.

8.3 Test Project change at the Competition

Where the Test Project has been circulated to Competitors in advance, NTC shall change a maximum of 30% of the work content. Please refer to the Competition Rules.

8.4 Competition rules

Refer to the competition rules of the Skills Canada National Competition which can be found on our website.

9 NATIONAL TECHNICAL COMMITTEE MEMBERS

Member Organization	Name
Saskatchewan – Chair	Satindar Nijhawan
Ontario – Co-Chair	Paul Cianflone
Manitoba	Joe Bettencourt
British Columbia	Des Hart
Newfoundland and Labrador	Kelly Spencer

Contact the Skills/Compétences Canada National Secretariat for any questions or concerns: Nathalie Maisonneuve (nathaliem@skillscanada.com).