Skills Compétences Canada
Vancouver2022

CONTEST DESCRIPTION

Refrigeration and Air Conditioning

POST-SECONDARY

SkillsCompétences Canada
Vancouver2022

Table of Contents

Due to unforeseeable COVID-19 regulations/uncertainties, competition documents are subject to change.

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

In response to the evolving labour market and changing skill needs, the Government of Canada has launched the new Skills for Success *(former Essential Skills)* model defining nine key skills needed by Canadians to participate in work, in education and training, and in modern society more broadly. SCC is currently working with Employment and Social Development Canada (ESDC) to bring awareness of the importance of these skills that are absolutely crucial for success in Trade and Technology careers. Part of this ongoing initiative requires the integration and identification of the Skills for Success in contest descriptions, projects, and project documents. The next phase and very important aspect of our Skills for Success (SfS) initiative is to provide a *Skills Report Card* to each competitor at the Skills Canada National Competition. The purpose of the report card is to inform the competitor about their current level of nine identified Skills for Success based on their competition scores. With this knowledge, the competitor will be made aware which 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 skills for success for the workplace in the legend below:
[1]Numeracy, [2]Communication, [3]Collaboration, [4]Adaptability, [5]Reading, [6]Writing, [7]Problem Solving, [8]Creativity and Innovation, [9]Digital

These Skills for Success have been identified in section 3.2 of your Contest Description and if applicable, in your Project and supporting documents.

2 CONTEST INTRODUCTION

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

https://www.skillscompetencescanada.com/en/skill_area/refrigeration/

2.2 Purpose of the Challenge

To assess the contestant's skills relating to the installation, operation, maintenance and repair of mechanical and/or electrical components and equipment for a refrigeration and/or air Conditioning system.

2.3 Duration of contest

10 hours

2.4 Skills and Knowledge to be tested.

The goal of the contest is to encourage students to learn more about refrigeration and air-conditioning. Refrigerant handling is an important component, and contestants must be aware of current regulations.

3 CONTEST DESCRIPTION

3.1 List of documents produced and timeline for when competitors have access to the documents on the Skills/Compétences Canada website

DOCUMENT	DATE OF DISTRIBUTION
Project	Janvier 2022
Refrigeration standards	February 2022

3.2 Tasks that may be performed during the contest

- Applying basic and advanced control circuit concepts (electrical and, or electronic)
- From a provided electrical schematic, install electrical components and wiring to achieve provided sequence of operation[8]
- Perform various joining procedures.[7]
- Project: Build a refrigeration piping system as per supplied information.
- Comply with all applicable Provincial and Federal codes and regulations[7]
- Applying health and safety regulations
- Pre-requisites:
    - Thorough knowledge of the refrigeration cycle[7]
    - The ability to use refrigeration tools and specialized equipment
    - The ability to measure accurately[1] and use tools required for working with copper tubing
    - Knowledge of and compliance with current industry codes and safety regulations[7]
    - The ability to use precision electrical test equipment
    - The ability to interpret electrical diagrams[8]
    - A good operating knowledge of typical controls used in refrigeration and air-conditioning systems (mechanical, electrical and electronic)

Essential Skills – [1]Numeracy, [5]Reading Text, [7]Thinking (Problem Solving, Significant use of Memory), [8]Document Use,

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and/or material provided by the competitor and/or the host facility

Competitors may only bring the tools in the list below. Should the competitor not bring any of the tools on the following list, SCC will not supply the tool(s).

- All materials required for the competition as per list posted on SCC website
- 1 – Set of common screwdrivers
- 1 – Precision screwdriver
- 1 – Set of Phillips screwdrivers
- 1 – Set of Robertson screwdrivers
- 1 – Set of nut-drivers
- 1 – Set of combination wrenches ¼ to $^{15}/_{16}$ in.
- 1 – 6in, 8in, 10in and 12in adjustable wrench
- 1 – Linesman pliers
- 1 – Electrical side cutters
- 1 – Needle nose pliers
- 1 – Slip joint pliers
- 1 – Wire crimpers
- 1 – Wire Strippers
- 1 – Set of imperial and metric allen keys
- 1 – Combination ratchet valve wrench
- 1 – Flaring/swaging kit
- 1 - Hammer
- 1 – Tubing cutter ¼ to 2-$^{1}/_{8}$in.
- 1 - File
- 1 – Tube reaming tool
- 1 – Mirror
- 1 - Flashlight
- 1 – Brazing blanket/heat shield
- 1 – Tape measure
- 1 – Valve core remover (4 in 1 ball valve tool)
- 1 – Nitrogen Purge Regulator
- 1 – Torpedo Level
- 1 – Utility knife
- 1 – Assortment of driver bits i.e.: #2 Robertson, # 2 Phillips
- 1 – Set of Analog refrigeration 4 port manifold and gauges (complete with: environmental hoses in good condition) (no electronic gauges permitted)
- 1 mini tube cutter
- Pencils, pens, notepad
- Calculator (cannot use cell phone)

- 1 – Spark ignitor or self-igniting tip

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.

4.2 Required clothing provided by the competitor.

- Competitors must wear appropriate clothing and standard safety gear
- Long sleeve (non-synthetic shirt for brazing) and long pants
- Leather gloves to be worn when brazing/soldering

5 HEALTH AND SAFETY

5.1 Safety program

SCC has implemented a comprehensive safety program as health and safety is an integral part of our competitions. Our safety program includes guidelines and procedures to make the work environment in each skill area safer.

5.1.1 Safety manual

As part of our program a safety manual has been created to monitor and document health and safety within each skill area. It includes a definite plan of action designed to prevent accidents. The safety manual will be provided for every skill and these instructions must be followed and respected by all participants and officials at the SCNC.

5.1.2 Safety workshop

During orientation, Competitors will participate in a Safety workshop and they 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 workshop, this will not affect the Competitor's competition time.

5.2 COVID-19 Protocol

The COVID-19 guidelines will be shared as soon as they are available.
The COVID-19 guidelines will be subject to change based on the BC COVID-19 guidelines in place at the time of the competition.

5.3 Personal protective equipment (PPE) provided by the competitor

- Clear Safety Glasses
- "Mechanics-style" work Gloves
- CSA approved Safety shoes
- All-Leather gloves for brazing

Note: Competitors who do not have the required protective equipment will not be allowed to participate in the competition

6 ASSESSMENT

6.1 Point breakdown

Note: This list is subject to change.

TASKS	/100
Electrical Controls	45
Piping	45
Safety	10

7 CONTEST SPECIFIC RULES

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

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 may not be guaranteed.

8.2 Ties

- Tiebreaker #1: The competitor with the highest score for Electrical Controls & Safety criteria shall be declared the winner.
- Tiebreaker #2: The competitor with the shortest time in Piping shall be declared the winner.
- Tiebreaker #3: The competitor with the shortest time in the Electrical Control shall 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
Newfoundland and Labrador	Maurice Tarrant
Prince Edward Island	Nick Green
Nova Scotia	Brian Nicholl
New Brunswick	Greg Daborn
Quebec	Hugo Tremblay
Ontario	Lockman (Rob) Robertson
Saskatchewan	Lee Blakely
Alberta	Justin Evernden – Chair
British Columbia	Raymond Koepke – Co-Chair
Manitoba	Richard LeSage

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