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2018

# SCNC

SKILLS CANADA  
NATIONAL COMPETITION

# OCMT

OLYMPIADES CANADIENNES  
DES MÉTIERS ET  
DES TECHNOLOGIES



SkillsCompétences  
Canada  
Edmonton2018

CONTEST DESCRIPTION / DESCRIPTION DE CONCOURS

# OUTDOOR POWER AND RECREATION EQUIPMENT MÉCANIQUE DE VÉHICULES LÉGERS ET D'ÉQUIPEMENT

SECONDARY AND POST- SECONDARY /  
NIVEAUX SECONDAIRE ET POSTSECONDAIRE



## Table of Contents

<b>1 THE ESSENTIAL SKILLS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY .....</b>	<b>3</b>
<b>2 CONTEST INTRODUCTION .....</b>	<b>3</b>
<b>3 CONTEST DESCRIPTION .....</b>	<b>4</b>
<b>4 EQUIPMENT, MATERIAL, CLOTHING .....</b>	<b>5</b>
<b>5 SAFETY REQUIREMENTS.....</b>	<b>6</b>
<b>6 ASSESSMENT .....</b>	<b>6</b>
<b>7 ADDITIONAL INFORMATION .....</b>	<b>7</b>
<b>8 NATIONAL TECHNICAL COMMITTEE MEMBERS.....</b>	<b>7</b>

## 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:

<sup>1</sup>Numeracy, <sup>2</sup>Oral Communication, <sup>3</sup>Working with Others, <sup>4</sup>Continuous Learning, <sup>5</sup>Reading Text, <sup>6</sup>Writing, <sup>7</sup>Thinking, <sup>8</sup>Document Use, <sup>9</sup>Digital

These essential skills have been identified with in section 2.3 and/or 3.2 of your Contest Description. The top three Essential Skills for your area of competition have been identified on 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/careers/transportation/outdoor-power-and-recreational-equipment/>

### 2.2 Purpose of the Challenge.

To test each student's skill and knowledge in the areas of inspection, measurement, maintenance and repair of small engines and recreational vehicles. Prepare each student for employment in the industry.

### 2.3 Duration of contest.

11 Hours

### 2.4 Skills and Knowledge to be tested.

Theory 35% Practical 65%

All phases of measurement will deal exclusively with metric only.

### 3 CONTEST DESCRIPTION

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

SECONDARY - DOCUMENTS	DATE OF DISTRIBUTION VIA WEBSITE
Theory Exam Example	January, 2018
Valve Adjustment Lab	January, 2018
2 Stroke Top End Measurement Lab	January, 2018
POST SECONDARY - DOCUMENTS	
Snowmobile CVT Lab	January, 2018
4 Stroke Engine Lab	January, 2018

#### 3.2 Tasks that will be performed during the contest.

- To demonstrate the skill and knowledge involved with the service and repair of two and four stroke engines
- Use of metric precision measuring tools<sup>1</sup>
  - Micrometers
  - Dial bore gauge
  - Vernier caliper
  - Feeler gauge
  - Dial indicator
  - Plastigauge®
- Accurately measure and analyze engine components for wear<sup>1</sup>
- Fuel Injection and Carburetor theory, adjustments, measuring and parts and circuits identification
- Use of repair manuals for retrieval of procedures, specifications, and troubleshooting charts<sup>5,8</sup>
- Accurately perform compression and crankcase pressure and vacuum test<sup>7</sup>
- Technical competence and safe work practice/procedures<sup>7</sup>
- Tool handling and recognition
- CVT Transmission service and theory of operation
- Belt, Chain, Gear Final Drive System Service
- Hydraulic Brake System Inspection
- Knowledge of Trade related Tire applications and designs
- General knowledge of 4 Cycle theory
- General knowledge of 2 Cycle theory
- Use of Digital Volt-Ohm Meter<sup>9</sup>
- Electrical Measurements including Volts, Ohms, Amps, and Voltage Drops<sup>1</sup>
- Ignition, charging, starting, and lighting system theory, inspection, and diagnosis<sup>7</sup>

*Essential Skills – <sup>1</sup>Numeracy, <sup>5</sup>Reading Text, <sup>8</sup>Document Use, <sup>7</sup>Thinking (Critical, Problem Solving), Digital<sup>9</sup>*

#### **4 EQUIPMENT, MATERIAL, CLOTHING**

##### **4.1 Equipment and material provided by Skills/Compétences Canada.**

- All necessary equipment, engines, hand tools, measuring tools and specialty tools
- DVOM
- Compression Tester
- Leakdown Tester
- Tec Angle Torque Wrench
- Dial Torque Wrench
- Micrometer Feed Torque Wrench
- Flashlight
- Screwdrivers
- Pliers
- Sockets, Ratchets, Extensions
- Wrenches
- Back Probes
- Feeler gauges
- Tape Measure
- Manufacturer Specific Tools

**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 Equipment and material provided by the competitor.**

- Competitors are not required to supply any tools.

##### **4.3 Required clothing provided by the competitor.**

- Clean provincially supplied clothing or an unmarked t-shirt (work shirt) and work pants

## 5 SAFETY REQUIREMENTS

### 5.1 Safety workshop

Upon arrival at the Skill area, 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.

### 5.1 List of required personal protective equipment (PPE) provided by Skills/Compétences Canada

- Nitrile Gloves
- Mechanics Gloves

### 5.2 List of required personal protective equipment (PPE) provided by the competitor.

- Safety Glasses
- CSA approved Safety footwear
- Hearing protection (optional)
- Mechanics Gloves

**Note:** Competitors will not be allowed to compete if the above items are not brought and used

## 6 ASSESSMENT

### 6.1 Point breakdown

SECONDARY - POINT BREAKDOWN		/100
50 Question Multiple Choice Theory Exam & Parts Identification Lab		10
Electrical Circuit Diagnostics and Ohm's Law Lab		10
Recoil Starter Diagnostic, Service and Theory Lab		10
Ignition, Charging, and Starting System Diagnostics Lab		10
Carburetor and EFI Service and Theory Lab		10
Motorcycle Brake and Final Drive Service and Theory Lab		10
2 Stroke Top End Assembly and Measurement Lab		10
4 Stroke Engine Diagnostics Lab i.e. Compression & Leakdown Tests		10
1 Cylinder DOHC Valve Adjustment and Cam Timing Lab		10
2 Stroke Compression and Crankcase Pressure/Vacuum Test Lab		10
POST SECONDARY – POINT BREAKDOWN		/100
Outboard Motor Lower Unit Service, Powerhead Service Lab		25
Snowmobile CVT, and Driveline Service Lab		25
Motorcycle EFI Diagnostic, Starting and Charging System Diagnostic Lab		25
Multi-Cylinder 4 Stroke Engine Inspection and Measurement Lab		25

## 7 ADDITIONAL INFORMATION

### 7.1 Consecutive translation.

If consecutive translation is required on site, 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.

### 7.2 Tie (No ties are allowed).

In the event of a tie in the secondary level competition, the competitor with the highest score in the Theory Exam will be declared the winner. If a second tie occurs, the competitor with the highest score in the 2 Stroke Top End Precision Measuring Lab will be declared the winner. If a third tie occurs, the competitor with the highest score in the Ignition, Charging, and Starting System Lab will be declared the winner.

In the event of a tie in the postsecondary competition, the competitor with the highest score in the Outboard Motor Lower Unit Service, Powerhead Service Lab will be declared the winner. If a second tie occurs, the competitor with the highest score in the Motorcycle EFI Diagnostic, Starting and Charging System Diagnostic Lab will be declared the winner. If a third tie occurs, the competitor with the highest score in the Snowmobile CVT, and Driveline Service Lab will be declared the winner.

### 7.3 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.

### 7.4 Competition rules.

Please refer to the [competition rules](#) of the Skills Canada National Competition.

## 8 NATIONAL TECHNICAL COMMITTEE MEMBERS

Member Organization	Name
Manitoba – Chair	Dustin Blackwell
Ontario	Roy King
Québec	Jean-Pierre Lanteri
Alberta	Mike Gamble
New Brunswick	Victor Vienneau
Saskatchewan	Cecil Machnee

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Marilou Leduc (mariloul@skillscanada.com).