

# Apprenticeship and Certification Study Guide



# Table of Contents

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Introduction .....	2
Exam Process .....	3
Before the Exam.....	3
During the Exam.....	3
After the Exam .....	3
Exam Format .....	4
Exam Content.....	8
Understanding the Red Seal Occupational Standard (RSOS).....	8
Exam Breakdown .....	10
RSOS Sub-tasks .....	11
Task Profile Checklist .....	12
Create a Study Plan.....	21
Resources - Websites .....	24
Resources – Book List.....	25
Conclusion.....	26

## Appendices

Appendix A: Regional Offices .....	27
Appendix B: Calculator Use .....	28
Appendix C: Answer Sheet Example .....	29

## Introduction

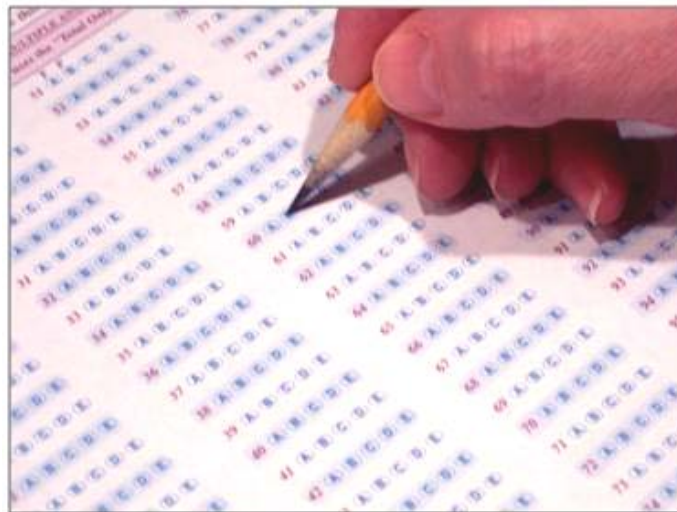
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This Study Guide has been developed by the Newfoundland and Labrador Department of Education and Early Childhood Development, Apprenticeship and Trades Certification Division, to assist apprentices and trade qualifiers as they prepare to write the Red Seal Exam. Red Seal Exams are available for all Red Seal trades. For a list of Red Seal trades please refer to the Department of Education and Early Childhood Development website: <https://www.gov.nl.ca/atcd/designated-trades/list-of-designated-trades/>

### Some of the specific goals of this guide are:

- ⇒ to help you understand the skills and knowledge that might be covered on the exam
- ⇒ to help you identify your strengths and weaknesses
- ⇒ to provide organization and structure for a course of study
- ⇒ to provide a list of resources to help you with your study plan
- ⇒ to support and supplement the teaching and learning process

This study guide outlines the theoretical portion of the program. The intent is not to replace technical training provided under the guidance of instructors. Rather, it is a tool to be used in conjunction with formal training.



## Exam Process

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### Before the Exam

You must contact the nearest Apprenticeship and Trades Certification Divisional office to make request to write the Red Seal exam (*See Appendix A for a list of regional offices*). Upon approval, the Apprenticeship Program Officer (APO) will notify you of your eligibility to write the exam, and provide you with scheduling information. If you require special accommodations due to a disability or language barrier, please contact your regional office for information on applying for this service.

### During the Exam

**You must bring:**

- personal identification such as a photo or signature ID or valid Newfoundland and Labrador driver's license
- your notification letter

**The following will be provided:**

- a calculator (*see Appendix B for calculator information*)
- all other items required such as pencils, scrap paper, etc.

**Important Note:**

Personal cell phones, calculators, or other electronic equipment are NOT allowed into the exam room. If you do bring them, they will be stored away and returned to you when you have completed the exam.

### After the Exam

Results will be mailed to you approximately seven to ten days after completion of the exam. All necessary instructions and information will be provided in the results letter.

The percentage mark you obtained will be provided. You will also be given a section by section breakdown, showing how many questions were in each section, as well as the number of questions in each section you completed successfully.

If you are successful in obtaining a 70% or more on your exam, you will be issued a Newfoundland and Labrador Certificate of Qualification with a Red Seal endorsement.

## Exam Format

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All Red Seal exams are written in multiple choice format. Each exam has between 100 and 150 questions. A multiple choice question consists of a stem (a complete question) followed by four options (A, B, C, D). The stem contains all the information necessary to answer the question. The options consist of the one correct answer and three “distracters.” Distracters are incorrect. (See Appendix C for a sample answer sheet).

IP Red Seal exams contain three types of questions:

### Level 1 Knowledge and Recall

Questions at this level test your ability to recall and understand definitions, facts, and principles.

### Level 2 Procedural and Application

Questions at this level test your ability to apply your knowledge of procedures to a new situation.

### Level 3 Critical Thinking

Questions at this level test your ability to interpret data, solve problems and arrive at valid conclusions.

#### Level 1 Examples:

1. What does an exhaust valve do?
  - A. Allows combustion gases to escape.
  - B. Allows for easier installation.
  - C. Allows oil to flow freely.
  - D. Allows for ring expansion.



2. Why adjust crossheads after reassembling an engine?

- A. To ensure proper exhausting occurs.
- B. To ensure both valves open simultaneously.
- C. To ensure the valve seat angle is maintained.
- D. To ensure maximum power is achieved.



3. How many U-bolt clips are required for 1.5 inch diameter rope?

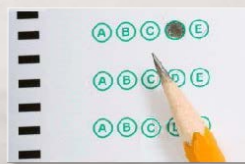
- A. 7.
- B. 6.
- C. 5.
- D. 4.



### Level 2 Examples:

1. If the flywheel to crankshaft alignment is not correct, what does it result in?

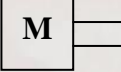
- A. Increased output horsepower.
- B. Slipping of the clutch.
- C. Excessive end play.
- D. Piston positioning being inaccurate.



2. What is the pour point, below zero of #1D winter fuel?

- A. 52.
- B. 44.
- C. 23.
- D. 17.



3. 

The above symbol indicates a(n)?

- A. Electric motor.
- B. Non-electric prime mover.
- C. Pneumatic pressure source.
- D. Hydraulic pressure source.



### Level 3 Examples:

1. A diesel engine equipped with a governor has a high idle speed of 2150 rpm and a rated speed of 1995 rpm.

What is the speed droop percentage of this engine?

- A. 2.8.
- B. 7.2.
- C. 7.8.
- D. 8.7.



2. A diesel engine equipped with a governor has a high idle speed of 2125 rpm and a rated speed of 2075 rpm.

What is the speed droop percentage of this engine?

- A. 4.3.
- B. 6.4.
- C. 0.6.
- D. 2.4.



3. What should an Ohmmeter read when placed across a new fusible link?

- A. Almost zero.
- B. Infinity.
- C. 12 Volts.
- D. 24 Volts.



**Source of questions:**

<https://www.red-seal.ca/eng/s.1mpl.2.2x.1mQ.5.2st.3.4ns.shtml?tid=101>

## Exam Content

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### Understanding the *Red Seal Occupational Standard (RSOS)*

The Red Seal model has historically been based on the development of the National Occupational Analysis (NOA) which supports the development of multiple-choice format examinations.

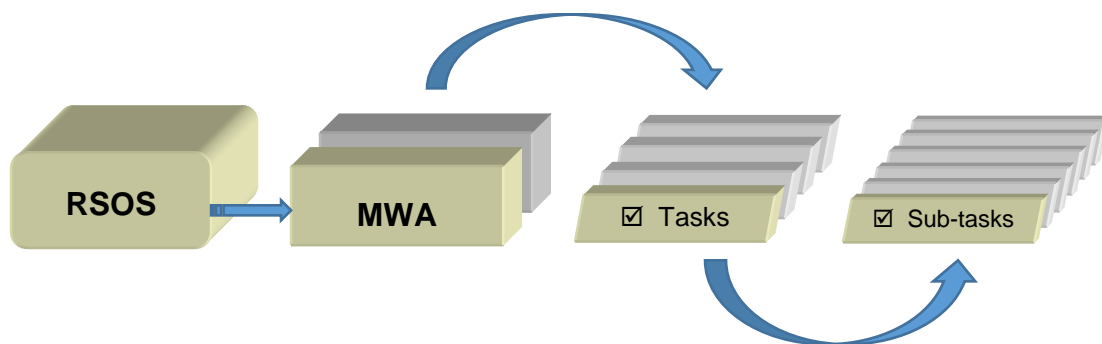
The RSOS was introduced in 2015 and is now taking the place of the NOA. Each RSOS or NOA sets the standard for a Red Seal trade. The Red Seal Examination is based on the Red Seal Standard.

The new standards provide greater consistency in learning resources and allow for increased industry involvement in the development of these standards. This new model places increases emphasis on apprenticeship training and assessing skills with industry learning objectives, outcomes and performance criteria.

The RSOS for each trade describes the tasks and sub-tasks; skills and knowledge requirements; summary of essential skills; safety information; trends affecting the trade; technical terms; names of tools and equipment; acronyms; learning objectives and outcomes; industry expected performance and essential skills related to each sub-task.

The RSOS is an excellent tool to use as you study for the Red Seal exam. RSOSs can be found at <http://www.red-seal.ca/resources/n.4.1-eng.html>

RSOS material is organized into the following categories: **MWA (Major Working Activity)**. The MWAs are further broken down into **TASKS** (*describes activities within an MWA*) and **SUB-TASKS** (*describe activities within a task – This is what the exam is based on*).

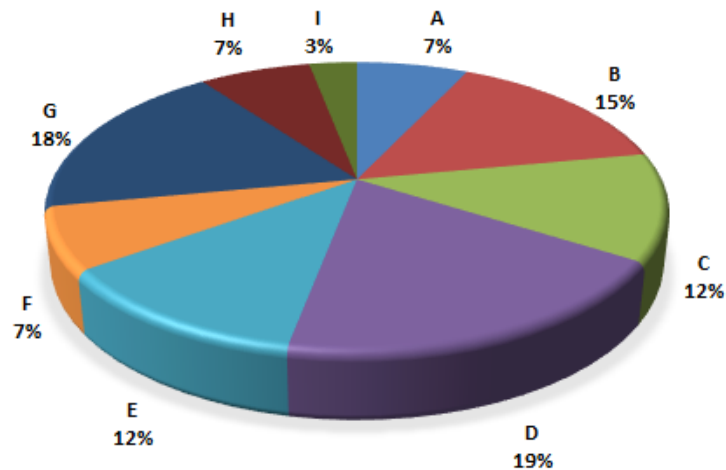


The NOA will continue to be used as the occupational standard for trades that do not yet have an RSOS developed.

## RSOS Pie Chart

The RSOS Pie Chart presents the MWA percentages in the form of a pie chart which tells you the approximate number of questions from each MWA. For example, 8% of the questions on the **Heavy Duty Equipment Technician** Exam will be based on **MWA A**.

### HEAVY DUTY EQUIPMENT TECHNICIAN



MWA Titles			
<b>MWA A</b>	Performs Common Occupational Skills	<b>MWA E</b>	Services, Diagnoses and Repairs Drivetrain Systems
<b>MWA B</b>	Services, Diagnoses and Repairs Engines and Supporting Systems	<b>MWA F</b>	Services, Diagnoses and Repairs Environmental Control Systems
<b>MWA C</b>	Services, Diagnoses and Repairs Steering, Suspension, Brake and Undercarriage & Wheel Assemblies	<b>MWA G</b>	Services, Diagnoses and Repairs Hydraulic, Hydrostatic and Pneumatic Systems
<b>MWA D</b>	Services, Diagnoses and Repairs Electrical and Electronic Systems	<b>MWA H</b>	Services, Diagnoses and Repairs Structural Components, Operator stations, Attachments and Accessories
		<b>MWA I</b>	Services, Diagnoses and Repairs Hybrid and All-Electric Equipment

## Exam Breakdown

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The **Heavy Duty Equipment Technician** exam currently has 135 questions. The following table shows a breakdown of the number of questions that come from each RSOS MWA. It is important to note that the exact number of questions can change at any time. When you are ready to write your exam, you may contact your regional office to verify the number of questions (See Appendix A).

		# of Questions
<b>MWA A</b>	<b>Performs Common Occupational Skills</b>	<b>10</b>
<b>Task 1</b>	Uses and maintains tools and equipment	
<b>Task 2</b>	Performs general maintenance and inspections	
<b>Task 3</b>	Organizes work	
<b>Task 4</b>	Performs routine trade activities	
<b>MWA B</b>	<b>Services, Diagnoses and Repairs Engines and Supporting Systems</b>	<b>20</b>
<b>Task 5</b>	Diagnoses engines and engine support systems	
<b>Task 6</b>	Repairs engines and engine support systems	
<b>MWA C</b>	<b>Services, Diagnoses &amp; Repairs Steering, Suspension, Brake &amp; Undercarriage Systems, &amp; Wheel Assemblies</b>	<b>16</b>
<b>Task 7</b>	Diagnoses hydraulic, hydrostatic and pneumatic systems	
<b>Task 8</b>	Repairs hydraulic, hydrostatic and pneumatic systems	
<b>MWA D</b>	<b>Services, Diagnoses and Repairs Electrical and Electronic Systems</b>	<b>25</b>
<b>Task 9</b>	Diagnoses drive train systems	
<b>Task 10</b>	Repairs drive train systems	
<b>MWA E</b>	<b>Services, Diagnoses and Repairs Drivetrain Systems</b>	<b>17</b>
<b>Task 11</b>	Diagnoses steering, suspension, brake systems, wheel assemblies and undercarriage	
<b>Task 12</b>	Repairs steering, suspension, brake systems, wheel assemblies and undercarriage	
<b>MWA F</b>	<b>Services, Diagnoses and Repairs Environmental Control Systems</b>	<b>9</b>
<b>Task 13</b>	Diagnoses electrical systems	
<b>Task 14</b>	Repairs electrical systems	
<b>Task 15</b>	Diagnoses electronic vehicle management systems	
<b>Task 16</b>	Repairs electronic vehicle management systems	
<b>MWA G</b>	<b>Services, Diagnoses and Repairs Hydraulic, Hydrostatic and Pneumatic Systems</b>	<b>25</b>
<b>Task 17</b>	Diagnoses environmental control systems	
<b>Task 18</b>	Repairs environmental control systems	
<b>MWA H</b>	<b>Service, Diagnoses &amp; Repairs Structural Components, Operator Stations, attachments &amp; accessories</b>	<b>9</b>
<b>Task 19</b>	Diagnoses structural components, accessories and attachments	
<b>Task 20</b>	Repairs structural components, accessories and attachments	
<b>MWA I</b>	<b>Services, Diagnoses and Repairs Hybrid and All-Electric Equipment</b>	<b>4</b>
<b>Task 21</b>	Diagnoses structural components, accessories and attachments	
<b>Task 22</b>	Repairs structural components, accessories and attachments	
<b>Total</b>		<b>135</b>

## RSOS Sub-tasks

The following *RSOS Task Profile Checklist* outlines the blocks, tasks and sub-tasks for your trade. The Red Seal exam is written to test your knowledge and abilities regarding the sub-tasks in the RSOS. This chart can be used to review your current knowledge. You can review by placing a check mark (✓) next to those you understand fully.

Place your focus on those you do not understand and study them until you are comfortable with the material. Think of possible questions in that particular content area.

The RSOS also contains a list of “supporting knowledge and abilities” for each sub-task. They are the skills and knowledge you must have to perform a sub-task. The supporting knowledge and abilities identified under each sub-task will be very helpful as you review. The list can be found in the RSOS for your trade.

**Task Profile Checklist  
Based on 2023 RSOS  
Heavy Duty Equipment Technician**

**MWA A: Performs Common Occupational Skills**

**Task 1: Performs safety related functions**

**Sub-Tasks**

- Performs hazard analysis
- Maintains safe work environment
- Uses personal protective equipment (PPE) and safety equipment
- Implements safety protocols for hybrid and all-electric equipment & attachments

**Task 2: Uses and maintains tools and equipment**

**Sub-Tasks**

- Uses hand, power, measuring, testing and diagnostic tools
- Uses shop equipment
- Uses access equipment
- Uses hoisting, rigging, lifting, cribbing and blocking equipment
- Uses welding equipment
- Uses heating and cutting equipment
- Uses electronic service tools and systems for diagnostics and programming

**Task 3: Performs routine work practices**

**Sub-Tasks**

- Uses documentation and reference materials
- Prepares job action plan
- Maintains fluids and lubricants
- Services hoses, tubing, piping and fittings
- Services bearings and seals
- Uses fasteners and sealing materials
- Services safety features
- Performs operational check-out

**Task 4: Uses communication and mentoring techniques**

**Sub-Tasks**

- Uses communication techniques
- Uses mentoring techniques

## MWA B: Services, Diagnoses and Repairs Engines and Supporting Systems

### Task 5: Services, diagnoses and repairs base engines

#### Sub-Tasks

- Services base engine
- Diagnoses base engines
- Repairs base engines

### Task 6: Services, diagnoses and repairs lubrication systems

#### Sub-Tasks

- Services lubrication systems
- Diagnoses lubrication systems
- Repairs lubrication systems

### Task 7: Services, diagnoses and repairs intake systems

#### Sub-Tasks

- Services intake systems
- Diagnoses intake systems
- Repairs intake systems

### Task 8: Services, diagnoses and repairs exhaust systems

#### Sub-Tasks

- Services exhaust systems
- Diagnoses exhaust systems
- Repairs exhaust systems

**Task 9: Services, diagnoses and repairs engine management systems**

*Sub-Tasks*

- Services engine management systems
- Diagnoses engine management systems
- Repairs engine management systems

**Task 10: Services, diagnoses and repairs fuel delivery systems**

*Sub-Tasks*

- Services fuel delivery systems
- Diagnoses fuel delivery systems
- Repairs fuel delivery systems

**Task 11: Services, diagnoses and repairs emission control systems**

*Sub-Tasks*

- Services emission control systems
- Diagnoses emission control systems
- Repairs emission control systems

**Task 12: Services, diagnoses and repairs cooling systems**

*Sub-Tasks*

- Services cooling systems
- Diagnoses cooling systems
- Repairs cooling systems

## MWA C: Services, Diagnoses and Repairs Steering, Suspension, brake and undercarriage systems, and wheel assemblies

### Task 13: Services, diagnoses and repairs steering systems

#### Sub-Tasks

- Services steering systems
- Diagnoses steering systems
- Repairs pneumatic systems

### Task 14: Services, diagnoses and repairs suspension systems

#### Sub-Tasks

- Services suspension systems
- Diagnoses suspension systems
- Repairs suspension systems

### Task 15: Services, diagnoses and repairs brake systems

#### Sub-Tasks

- Services brake systems
- Diagnoses brake systems
- Repairs brake systems

### Task 16: Services, diagnoses and repairs undercarriage systems

#### Sub-Tasks

- Services undercarriage systems
- Diagnoses undercarriage systems
- Repairs undercarriage systems

### Task 17: Services, diagnoses and repairs wheel assemblies

#### Sub-Tasks

- Services wheel assemblies
- Diagnoses wheel assemblies
- Repairs wheel assemblies

## MWA D: Services, Diagnoses and Repairs Electrical and Electronic Systems

### Task 18: Services, diagnoses and repairs charging systems

Sub-Tasks

- Services charging systems
- Diagnoses charging systems
- Repairs charging systems

### Task 19: Services, diagnoses and repairs starting systems

Sub-Tasks

- Service starting systems
- Diagnose starting systems
- Repairs starting systems

### Task 20: Services, diagnoses and repairs battery systems

Sub-Tasks

- Services battery systems
- Diagnoses battery systems
- Repairs battery systems

### Task 21: Services, diagnoses and repairs electrical components

Sub-Tasks

- Service electrical components
- Diagnoses electrical components
- Repairs electrical components

### Task 22: Services, diagnoses, repairs equipment management systems & electronic components

Sub-Tasks

- Services equipment management systems and electronic components
- Diagnoses equipment management systems and electronic components
- Repairs equipment management systems and electronic components

## MWA E: Services, Diagnoses and Repairs Drivetrain Systems

### Task 23: Services, diagnoses and repairs clutches

#### Sub-Tasks

- Services clutches
- Diagnoses clutches
- DRepairs clutches

### Task 24: Services, diagnoses & repairs torque converters, fluid couplers & hydraulic retarders

#### Sub-Tasks

- Services torque converters, fluid couplers and hydraulic retarders
- Diagnoses torque converters, fluid couplers and hydraulic retarders
- Repairs torque converters, fluid couplers and hydraulic retarders

### Task 25: Services, diagnoses and repairs manual transmissions and transfer cases

#### Sub-Tasks

- Services manual transmissions and transfer cases
- Diagnoses manual transmissions and transfer cases
- Repairs manual transmissions and transfer cases

### Task 26: Services, diagnoses and repairs automatic and powershift transmissions

#### Sub-Tasks

- Services automatic and powershift transmissions
- Diagnoses automatic and powershift transmissions
- Repairs automatic and powershift transmissions

## MWA E: Services, Diagnoses and Repairs Drivetrain Systems (Cont'd)

### Task 27: Services, diagnoses and repairs driveline systems

#### Sub-Tasks

- Services driveline systems
- Diagnoses driveline systems
- Repairs driveline systems

### Task 28: Services, diagnoses and repairs drive axles and differentials

#### Sub-Tasks

- Services drive axles and differentials
- Diagnoses drive axles and differentials
- Repairs drive axles and differentials

### Task 29: Services, diagnoses and repairs final drive systems

#### Sub-Tasks

- Services final drive systems
- Diagnoses final drive systems
- Repairs final drive systems

## MWA F: Services, Diagnoses and Repairs Environmental Control Systems

### Task 30: Services, diagnoses and repairs heating systems

#### Sub-Tasks

- Services heating systems
- Diagnoses heating systems
- Repairs heating systems

### Task 31: Services, diagnoses and repairs ventilation and filtration systems

#### Sub-Tasks

- Services ventilation and filtration systems
- Diagnoses ventilation and filtration systems
- Repairs ventilation and filtration systems

### Task 32: Services, diagnoses and repairs air conditioning systems

#### Sub-Tasks

- Services air conditioning systems
- Diagnoses air conditioning systems
- Repairs air conditioning systems

### Task 33: Services, diagnoses and repairs sound suppression systems

#### Sub-Tasks

- Services sound suppression systems
- Diagnoses sound suppression systems
- Repairs sound suppression systems

## MWA G: Services, Diagnoses and Repairs Hydraulic, Hydrostatic & Pneumatic Systems

### Task 34: Services, diagnoses and repairs hydraulic systems

#### Sub-Tasks

- Services hydraulic systems
- Diagnoses hydraulic systems
- Repairs hydraulic systems

### Task 35: Services, diagnoses and repairs hydrostatic systems

#### Sub-Tasks

- Services hydrostatic systems
- Diagnoses hydrostatic systems
- Repairs hydrostatic systems

### Task 36: Services, diagnoses and repairs pneumatic systems

#### Sub-Tasks

- Services pneumatic systems
- Diagnoses pneumatic systems
- Repairs pneumatic systems

## MWA H: Services , Diagnoses & Repairs Structural Components, Operator Stations, Attachments & Accessories

### Task 37: Services, diagnoses and repairs structural components

#### Sub-Tasks

- Services structural components
- Diagnoses structural components
- Performs mechanical repairs on structural components

### Task 38: Services, diagnoses and repairs operator station components

#### Sub-Tasks

- Services operator station components
- Diagnoses operator station components
- Repairs operator station components

### Task 39: Services, diagnoses and repairs attachments and accessories

#### Sub-Tasks

- Services attachments and accessories
- Diagnoses attachments and accessories
- Repairs attachments and accessories

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## MWA I: Services, Diagnoses and Repairs Hybrid and All-Electric Equipment

### Task 40: Services, diagnoses and repairs hybrid equipment

#### Sub-Tasks

- Services hybrid equipment
- Diagnoses hybrid equipment
- Repairs hybrid

### Task 41: Services, diagnoses and repairs all-electric equipment

#### Sub-Tasks

- Services all-electric equipment
- Diagnoses all-electric equipment
- Repairs all-electric equipment

## Create a Study Plan

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As you prepare for your exam, it is important to plan a schedule. The following two tables will help you stay on track.

The first table is a **“Weekly Study Plan.”** In this table list the areas you will focus your study for each day. You should include items you need to review as well as items you need to study. Remember, more time will be needed for study in areas you find difficult, whereas you may only require review in areas you are more familiar with. As you work through the RSOS sub-task list you can start to fill in this table.

The second table is a **“Study Time Table.”** It is important to create a study schedule where you determine the best days of the week and times of day for you to study.

Print several copies of these tables and fill out for each week of study. It is important to stick to your study schedule.

**Weekly Study Plan for Week of:** \_\_\_\_\_

	Area of Study 1	Area of Study 2	Area of Study 3	Area of Study 4	Area of Study 5	Area of Study 6
Mon.						
Tues.						
Wed.						
Thu.						
Fri.						
Sat.						
Sun.						

**Study Time Table for Week of:** \_\_\_\_\_

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8:00 AM - 9:00 AM							
9:00 AM - 10:00 AM							
10:00 AM - 11:00 AM							
11:00 AM - 12:00 Noon							
12:00 Noon - 1:00 PM							
1:00 PM - 2:00 PM							
2:00 PM - 3:00 PM							
3:00 PM - 4:00 PM							
4:00 PM - 5:00 PM							
5:00 PM - 6:00 PM							
6:00 PM - 7:00 PM							
7:00 PM - 8:00 PM							

## Resources - Websites

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Study information can be drawn from a variety of sources. A sample list of study materials (websites and books) is provided below. These and other helpful resources may be found in a local college bookstore, on the internet, or at your place of employment. You may also be able to borrow them from an apprentice or journeyman in your trade.

### Study Strategies and Exam Preparation Guide

The *Study Strategies & Exam Preparation Guide* is meant to be used in conjunction with this study guide. It provides direction and information on such areas as study habits, test preparation and test taking techniques.

<https://www.gov.nl.ca/atcd/files/Study-Strategies-and-Exam-Prep-Guide-November-2025.pdf>

### Plan of Training (POT)

A *Provincial Plan of Training* details the full scope of learning for a particular occupation, including both technical training competencies and industry experiences necessary to write a Red Seal exam (and complete the requirements for Red Seal Certification), or to write a provincial examination. The Plan of Training is based on the RSOS.

<https://www.gov.nl.ca/atcd/designated-trades/pots-aacs/>

### Red Seal Website

**Red Seal Occupational Standard** - The RSOS is a document used for Red Seal trades that describes the knowledge and abilities required by a fully competent trades-person working in that trade. The content for the Red Seal exam is based on the RSOS.

<https://www.red-seal.ca/eng/w.2lc.4m.2.shtml>

### Heavy Duty Equipment Technician PRACTICE Exam

This is **NOT** a Red Seal exam. This is a practice exam provided by the Red Seal Standards program. It was developed using similar question types to that of a Red Seal exam. The exam is intended to be used for self-assessment in preparation for writing a Red Seal Exam.

[www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=101](http://www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=101)

### Red Seal Exam Self-Assessment Guide

Use this self-assessment tool to rate your own understanding and experience with the tasks of the trade that are on the Red Seal examination:

[https://www.red-seal.ca/\\_conf/assets/custom/docms/heavy-duty-equip-tech/self-assessment.pdf](https://www.red-seal.ca/_conf/assets/custom/docms/heavy-duty-equip-tech/self-assessment.pdf)

### Tools and Equipment

The Red Seal website also lists Tools and Equipment which can help in preparing for your Red Seal exam:

[http://www.red-seal.ca/trades/heavydutyequiptech/2014n.4.1\\_.1pp.1\\_t.4.4ls-eng.html](http://www.red-seal.ca/trades/heavydutyequiptech/2014n.4.1_.1pp.1_t.4.4ls-eng.html)

### Glossary

The Red Seal website lists a Glossary of Terms which will be helpful in preparing for your Red Seal exam:

[http://www.red-seal.ca/trades/heavydutyequiptech/2014n.4.1\\_.1ppb\\_gl.4ss.1ry-eng.html](http://www.red-seal.ca/trades/heavydutyequiptech/2014n.4.1_.1ppb_gl.4ss.1ry-eng.html)

### Acronyms

The Red Seal website lists Acronyms which will be helpful in preparing for your Red Seal exam:

[https://www.red-seal.ca/eng/trades/heavydutyequiptech/2014n.4.1\\_.1ppc\\_.1cr.4nym.shtml](https://www.red-seal.ca/eng/trades/heavydutyequiptech/2014n.4.1_.1ppc_.1cr.4nym.shtml)

## Resources – Book List

The books listed below are sorted according to RSOS blocks as referenced throughout this study guide. You can use this list to help you obtain information on specific topics. It is not necessary to use these books specifically, as you may find others that will be equally beneficial.

BOOK	MWA							
	A	B	C	D	E	F	G	H
Modern Diesel Technology (MDT): Electricity and Electronics						✓		
MDT: Diesel Engines		✓				✓		
MDT: Brakes, Steering and Suspension Systems					✓			
MDT: Electronic Diesel Engine Diagnosis		✓				✓		
MDT: Heating, Ventilation, Air Conditioning and Refrigeration							✓	
MDT: Heavy Equipment Systems			✓	✓	✓	✓		
Diesel Mechanics, 4 <sup>th</sup> edition	✓	✓						
Medium/Heavy Duty Truck Engines, Fuel & Computerized Management Systems, 3 <sup>rd</sup> edition		✓					✓	
Canadian Truck and Transport Technician: Inter-provincial Certificate of Qualification Test Preparation	✓	✓	✓	✓	✓	✓	✓	✓

**If you wish to obtain any of the resources listed above, here is the reference information:**

- Modern Diesel Technology: Electricity and Electronics*, Delmar Gengage Learning, Bennett, ISBN 1-4018-801304
- Modern Diesel Technology: Diesel Engines*, Delmar Gengage Learning, Spears, ISBN 1-4018-9809-2
- Modern Diesel Technology: Brakes, Steering and Suspension Systems*, Delmar Gengage Learning, Bennett, ISBN 1-4180-1372-2
- Modern Diesel Technology: Electronic Diesel Engine Diagnosis*, Delmar Gengage Learning, Bennett, ISBN 1-4018-7079-1
- Modern Diesel Technology: Heating, Ventilation, Air Conditioning and Refrigeration*, Delmar Gengage Learning, Dixon, ISBN 1-4018-7849-0
- Modern Diesel Technology: Heavy Equipment Systems*, Delmar Gengage Learning, 2009, Bennett, Huzij and Spano, ISBN 1-4180-0950-4
- Diesel Mechanics*, 4<sup>th</sup> edition, McGraw-Hill, 1999, Evridge and Schulz, ISBN 0-02-803462-7
- Medium/Heavy Duty Truck Engines, Fuel & Computerized Management Systems*, 3<sup>rd</sup> edition, Delmar Gengage Learning, 2009, Bennett, ISBN 1-4283-6666-0
- Canadian Truck and Transport Technician: Interprovincial Certificate of Qualification Test Preparation*, Centennial College Press, 2003, Bennett, Parsons and Restoule, ISBN 0-919852-44-0 \*\* (85% of the Heavy Duty content is covered here).

## Disclaimer

Various external resources (websites, textbooks) have been listed in this study guide to assist an individual in preparing to write a Red Seal Exam. This does not mean the Department of Education and Early Childhood Development, Newfoundland and Labrador endorses the material or that these are recommended as the best resources. There may be other resources of equal or greater value to an individual preparing for a Red Seal exam. The Department of Education and Early Childhood Development has no control over the content of external textbooks and websites listed, and no responsibility is assumed for the accuracy of the material.

## Conclusion

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We hope this guide has provided you with some useful tools as you prepare for your Red Seal exam. If you have any questions regarding your Red Seal exam please contact your regional office (*see Appendix A for a list of regional offices*).

We appreciate your comments and feedback regarding the usefulness of this study guide. If you have any comments or suggestions, we welcome your feedback. The feedback form at the end of this guide can be used for this purpose.

## Appendix A: Regional Offices

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If you have any questions regarding your Red Seal exam, please contact one of the following regional offices:

Department of Education and Early Childhood Development  
Apprenticeship and Trades Certification Division  
Toll Free: 1-877-771-3737

<https://www.gov.nl.ca/atcd/contact-us/staff-listing-and-office-locations/>

### Corner Brook

1-3 Union Street  
Aylward Building, 2<sup>nd</sup> Floor  
Corner Brook, NL A2H 5M7

Telephone: (709) 637-2366  
Facsimile: (709) 637-2519

### Grand Falls-Windsor

42 Hardy Avenue  
Grand Falls-Windsor, NL  
A2A 2J9

Telephone: (709) 292-4215  
Facsimile: (709) 292-4502

### Clarenville

45 Tilley's Road  
Clarenville, NL  
A5A 1Z4

Telephone: (709) 466-3982  
Facsimile: (709) 466-3987

### St. John's

P.O. Box 8700  
1170 Topsail Road  
Mount Pearl, NL A1B 4J6

Telephone: (709) 729-2729  
Facsimile: (709) 729-5878

### Happy Valley-Goose Bay

163 Hamilton River Road  
Bursey Building  
Happy Valley-Goose Bay, NL  
A0P 1E0

Telephone: (709) 896-6348  
Facsimile: (709) 896-3733

### Wabush

1D Grenfell Drive  
P.O. Box 160  
Wabush, NL  
A0R 1B0

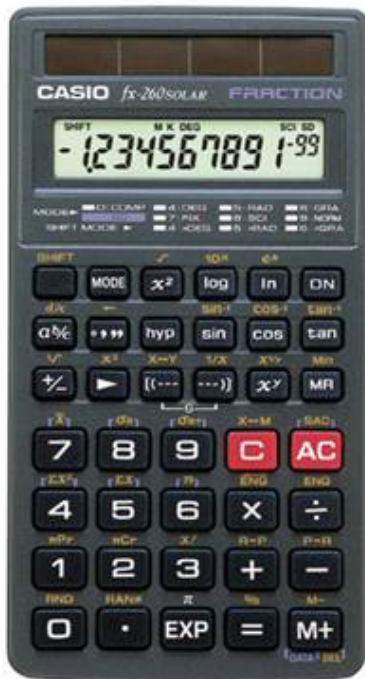
Telephone: (879) 382-1920  
Facsimile: (709) 282-3007

## Appendix B: Calculator Use

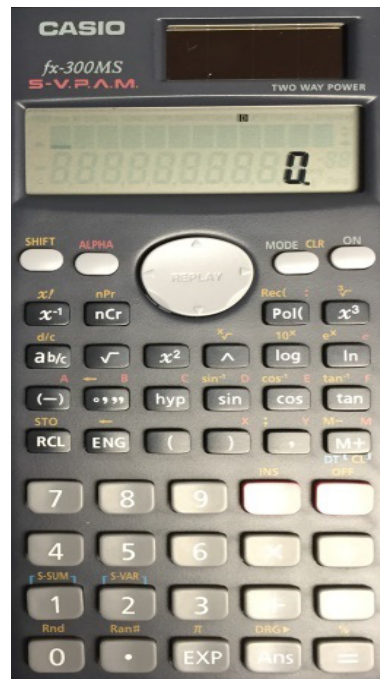
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The picture below shows a calculator with the same functions as the one you will be provided with during your exam. It is advisable to borrow or purchase one with similar functions so that you can familiarize yourself with it before you write your exam.

**Casio FX-260**



**Casio FX-300 MS**



# Appendix C: Answer Sheet Example

With your exam you will be given an answer sheet similar to the one below. When answering multiple choice questions be sure to fill the circle completely and fill the circle that corresponds to the question on the exam.

Dual readhead scanner  required  to score this sheet

KEY ID  
A B C D

SCORING & PRINTING OPTIONS:  
 RESCORE  MULTIPLE ANSWER SCORING  
 This sheet always uses the "Total Only" scoring option.

FEED IN THIS DIRECTION ↑

1	T F	A B C D E
2	T F	A B C D E
3	T F	A B C D E
4	T F	A B C D E
5	T F	A B C D E
6	T F	A B C D E
7	T F	A B C D E
8	T F	A B C D E
9	T F	A B C D E
10	T F	A B C D E
11	T F	A B C D E
12	T F	A B C D E
13	T F	A B C D E
14	T F	A B C D E
15	T F	A B C D E
16	T F	A B C D E
17	T F	A B C D E
18	T F	A B C D E
19	T F	A B C D E
20	T F	A B C D E
21	T F	A B C D E
22	T F	A B C D E
23	T F	A B C D E
24	T F	A B C D E
25	T F	A B C D E
26	T F	A B C D E
27	T F	A B C D E
28	T F	A B C D E
29	T F	A B C D E
30	T F	A B C D E
31	T F	A B C D E
32	T F	A B C D E
33	T F	A B C D E
34	T F	A B C D E
35	T F	A B C D E
36	T F	A B C D E
37	T F	A B C D E
38	T F	A B C D E
39	T F	A B C D E
40	T F	A B C D E
41	T F	A B C D E
42	T F	A B C D E
43	T F	A B C D E
44	T F	A B C D E
45	T F	A B C D E
46	T F	A B C D E
47	T F	A B C D E
48	T F	A B C D E
49	T F	A B C D E
50	T F	A B C D E
51	T F	A B C D E
52	T F	A B C D E
53	T F	A B C D E
54	T F	A B C D E
55	T F	A B C D E
56	T F	A B C D E
57	T F	A B C D E
58	T F	A B C D E
59	T F	A B C D E
60	T F	A B C D E
61	T F	A B C D E
62	T F	A B C D E
63	T F	A B C D E
64	T F	A B C D E
65	T F	A B C D E
66	T F	A B C D E
67	T F	A B C D E
68	T F	A B C D E
69	T F	A B C D E
70	T F	A B C D E
71	T F	A B C D E
72	T F	A B C D E
73	T F	A B C D E
74	T F	A B C D E
75	T F	A B C D E
76	T F	A B C D E
77	T F	A B C D E
78	T F	A B C D E
79	T F	A B C D E
80	T F	A B C D E
81	T F	A B C D E
82	T F	A B C D E
83	T F	A B C D E
84	T F	A B C D E
85	T F	A B C D E
86	T F	A B C D E
87	T F	A B C D E
88	T F	A B C D E
89	T F	A B C D E
90	T F	A B C D E
91	T F	A B C D E
92	T F	A B C D E
93	T F	A B C D E
94	T F	A B C D E
95	T F	A B C D E
96	T F	A B C D E
97	T F	A B C D E
98	T F	A B C D E
99	T F	A B C D E
100	T F	A B C D E

FEED IN THIS DIRECTION ↑

NUMBER CORRECT	
PERCENT CORRECT	
ROSTER NUMBER	
SCORE	
RESCORE	

COMBINED POINTS EARNED	
COMBINED PERCENT CORRECT	
LETTER GRADE	
SCORE	
RESCORE	

200 ITEM

MARKING INSTRUCTIONS  
 Use a No. 2 Pencil  
 Fill oval completely  
 Erase cleanly

STUDENT ID NUMBER									
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9

ANSWER KEY INFO.  
 # OF KEYS  
 ITEM COUNT

0	0	0	2
1	1	1	3
2	2	2	4
3	3	3	5
4	4	4	6
5	5	5	7
6	6	6	8
7	7	7	9
8	8	8	0
9	9	9	1

PERFORMANCE ASSESSMENT  
 % OF TOTAL SCORE  
 POINTS EARNED

0% = 100%				
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Bar Code

## Feedback Form

### Study Guide – Heavy Duty Equipment Technician

Please answer the following:

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- (1) This Study Guide is a useful tool for exam preparation.  
 strongly agree     agree     disagree     strongly disagree
- (2) The topics contained in the guide are arranged in a logical order.  
 strongly agree     agree     disagree     strongly disagree
- (3) The design and format of the guide caught my attention.  
 strongly agree     agree     disagree     strongly disagree
- (4) The instructions throughout the guide are clear and to the point.  
 strongly agree     agree     disagree     strongly disagree
- (5) The resources listed in this guide are suitable and valuable.  
 strongly agree     agree     disagree     strongly disagree
- (6) The guide should contain more information.  
 strongly agree     agree     disagree     strongly disagree

Suggested information/resources to include:

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Additional Comments:

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**Please complete this form and return via fax or mail to the following:**

Department of Education and Early Childhood Development  
Apprenticeship and Trades Certification Division  
Standards and Curriculum Unit  
45 Tilley's Road, Clarendville, NL A5A 1Z4  
Fax: (709) 466-3987

Department of Education and Early Childhood Development  
Apprenticeship and Trades Certification Division

