

Apprenticeship and Certification Study Guide



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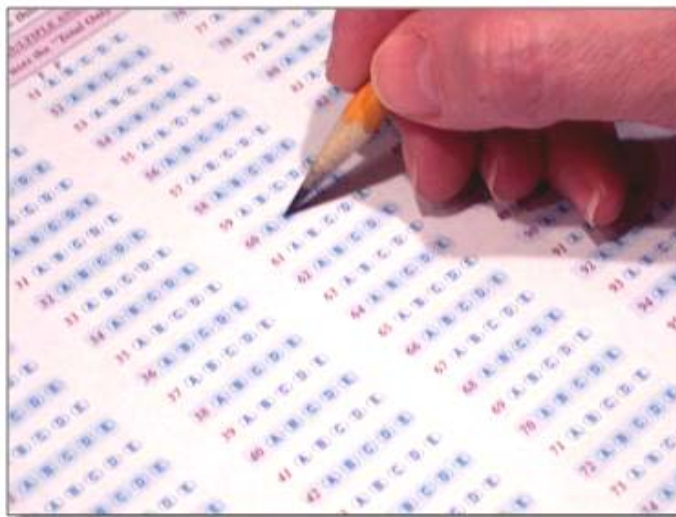
Introduction

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

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*)
- Canadian Electrical Code Book
- 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

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).

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. You need to make a 2" diameter round hole in a piece of 5/8" plywood. Which tool is best suited for this application?

- A. A drill with an auger bit
- B. A reciprocating saw
- C. A drill with a hole saw
- D. A hacksaw



2. You have just finished connecting a new three-phase squirrel cage induction motor. Your foreman asks you to "bump" the motor. What will this test indicate?

- A. The stability of the motor mounts
- B. The resistance of the windings
- C. The amount of inrush current
- D. The direction of rotation



3. Which of the following is one disadvantage of an autotransformer?

- A. Primary current is limited
- B. Secondary current is excessively high
- C. Impedance increases with heat
- D. There is no primary-secondary electrical isolation



Level 2 Examples:

1. When installing single conductor metal-sheathed cables which of the following is an acceptable method for reducing the sheath current?

- A. Bond the sheath to all non-current carrying components
- B. Bond all of the sheaths together with #6 SWG bare copper
- C. Float the sheaths at the load end
- D. Use the sheath as the bonding conductor



2. When is it permitted to use the neutral conductor to bond equipment to ground?

- A. Only if #2 AWG or larger conductors are installed
- B. Only if the neutral conductor is bare
- C. Only on the supply side of the service connection
- D. Only if it is not practical to ground the equipment



3. A motor has an FLA of 112 A. What is the smallest size RW90 XLPE conductor that can be run from the fused disconnect to the motor if flexible metallic conduit is used as the wiring method?

- A. 2 AWG
- B. 1 AWG
- C. 0 AWG
- D. 00 AWG



Level 3 Examples:

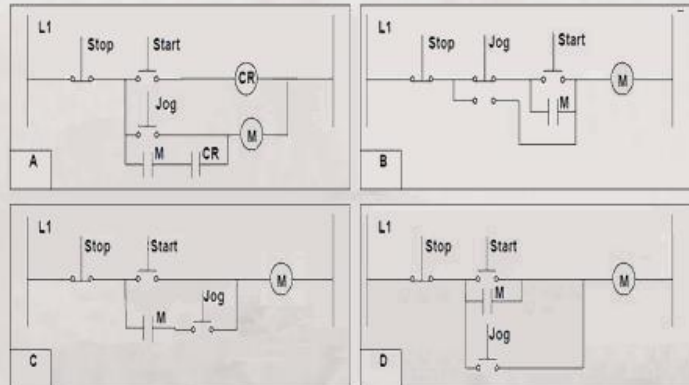
1. Your customer has a machine that requires a fan to continue running for 30 seconds after a motor is shut off. Which of the following components will you need to use to build the control circuit for this machine?

- A. On-delay timer
- B. Off-delay timer
- C. Normally closed timer
- D. Normally open timer



2. Which of the following diagrams represents a circuit that will allow both starting and jogging?

- A. A
- B. B
- C. C
- D. D



3. A motor nameplate gives the following information

Voltage: 600 V	Phase: 3
Current: 25.7 A	Design: B
Ser Fac: 1.15	Type: P
Class: F	Duty: Cont

Which of the following is the proper size of time of delay fuse for the feeders that supply three of these motors if all three motors start simultaneously?

- A. 45 A
- B. 100 A
- C. 135 A
- D. 150 A



Source of questions:

<http://www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=51>

Exam Content

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.

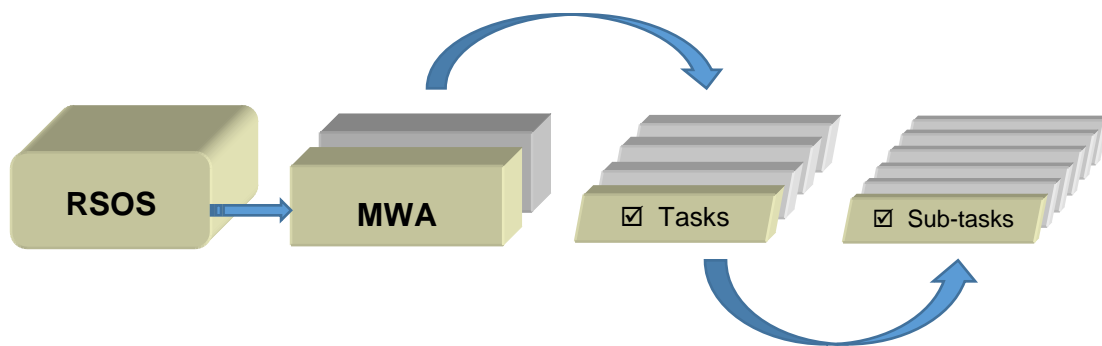
The RSOS was introduced in 2015 and is now taking the place of the NOA. Each RSOS or NOA sets the standard for a Red Seal trade. The Red Seal Examination is based on the Red Seal Standard.

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*).

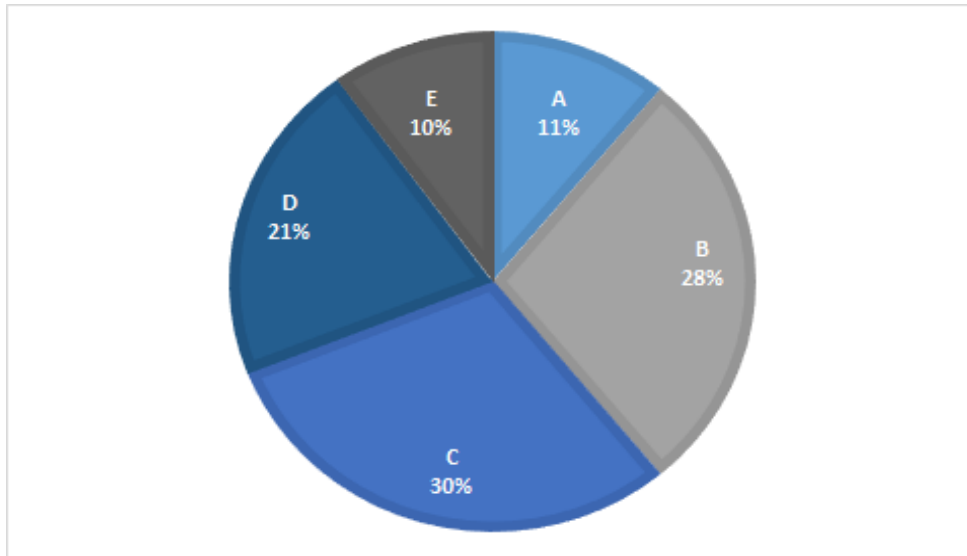


The NOA will continue to be used as the occupational standard for trades that do not yet have an RSOS developed.

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, 11% of the questions on the **Construction Electrician** Exam will be based on **MWA A**.

CONSTRUCTION ELECTRICIAN



MWA Titles			
MWA A	Performs Common Occupational Skills	MWA D	Installs, Services and Maintains Motors and Control Systems
MWA B	Installs, Services and Maintains Generating, Distribution and Service Systems	MWA E	Installs, Services and Maintains Signaling and Communication Systems
MWA C	Installs, Services and Maintains Wiring Systems		

Exam Breakdown

The **Construction Electrician** exam currently has 100 questions. The following table shows a breakdown of the approximate number of questions that come from each RSOS MWA. It is important to note that the 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
MWA A	Performs Common Occupational Skills	11
Task 1	Performs safety-related functions	
Task 2	Uses tools and equipment	
Task 3	Organizes work	
Task 4	Fabricates and installs support components	
Task 5	Commissions and decommissions electrical systems	
Task 6	Uses communication and mentoring techniques	
MWA B	Installs, Services and Maintains Generating, Distribution and Service Systems	28
Task 7	Installs, services and maintains consumer/supply services and metering equipment	
Task 8	Installs, services and maintains protection devices	
Task 9	Installs, services and maintains power distribution equipment	
Task 10	Installs, services and maintains power conditioning, uninterruptible power supply (UPS) and surge suppression systems	
Task 11	Installs, services and maintains bonding, grounding, ground fault protection & detection systems	
Task 12	Installs, services and maintains power generation and conversion systems	
Task 13	Installs, services and maintains renewable energy generating and storage systems	
Task 14	Installs, services and maintains high voltage systems	
Task 15	Installs, services and maintains transformers	
MWA C	Installs, Services and Maintains Wiring Systems	30
Task 16	Installs, services and maintains raceways, conductors, cables and enclosures	
Task 17	Installs, services and maintains branch circuitry and devices	
Task 18	Installs, services and maintains heating, ventilating and air-conditioning (HVAC) systems	
Task 19	Installs, services and maintains electric heating systems	
Task 20	Installs, services and maintains exit and emergency lighting systems	
Task 21	Installs, services and maintains cathodic protection systems	
MWA D	Installs, Services and Maintains Motors and Control Systems	21
Task 22	Installs, services and maintains motor starters and controls	
Task 23	Installs, services and maintains drives	
Task 24	Installs, services and maintains motors	
Task 25	Installs, programs, services and maintains automated control systems	
MWA E	Installs, Services and Maintains Signalling and Communication Systems	10
Task 26	Installs, services and maintains signalling systems	
Task 27	Installs, services and maintains communication systems	
Task 28	Installs, services and maintains integrated control systems	
Total		100

RSOS Sub-tasks

The following *RSOS Task Profile Checklist* outlines the MWAs, 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 checkmark (✓) 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, on the Red Seal website, for your trade.

Task Profile Checklist Based on RSOS 2022 Construction Electrician

MWA A: Performs Common Occupational Skills

Task 1: Performs Safety-Related Functions

- Sub-Tasks**
- Uses personal protective equipment (PPE) and safety equipment
 - Maintains safe work environment
 - Performs lock-out and tag-out procedures

Task 2: Uses Tools and Equipment

- Sub-Tasks**
- Uses common and specialty tools and equipment
 - Uses access equipment
 - Uses rigging, hoisting and lifting equipment

Task 3: Organizes Work

- Sub-Tasks**
- Interprets plans, drawings and specifications
 - Organizes materials and supplies
 - Plans project tasks and procedures
 - Prepares worksite
 - Finalizes required documentation

Task 4: Fabricates and Installs Support Components

- Sub-Tasks**
- Fabricates support structures
 - Installs brackets, hangers and fasteners
 - Installs seismic restraint systems

Task 5: Commissions and Decommissions Electrical Systems

- Sub-Tasks**
- Performs start-up and shutdown procedures
 - Performs commissioning and decommissioning of systems

Task 6: Uses Communication and Mentoring Techniques

- Sub-Tasks**
- Uses communication techniques
 - Uses mentoring techniques

MWA B: Installs, Services and Maintains Generating, Distribution and Service Systems

Task 7: Installs, Services and Maintains Consumer/Supply Services and Metering Equipment

Sub-Tasks

- Installs single-phase consumer/supply services and metering equipment
- Installs three-phase consumer/supply services and metering equipment
- Performs servicing and maintenance of single-phase consumer/supply services & metering equipment
- Performs servicing and maintenance of three-phase consumer/supply services & metering equipment

Task 8: Installs, Services and Maintains Protection Devices

Sub-Tasks

- Installs over-current protection devices
- Installs ground fault, arc fault and surge protection devices
- Performs servicing and maintenance of protection devices

Task 9: Installs, Services and Maintains Power Distribution Equipment

Sub-Tasks

- Installs power distribution equipment
- Performs servicing and maintenance of power distribution equipment

Task 10: Installs, Services and Maintains Power Conditioning, Uninterruptible Power Supply (UPS) and Surge Suppression Systems

Sub-Tasks

- Installs power conditioning, UPS and surge suppression systems
- Performs servicing & maintenance of power conditioning, UPS & surge suppression systems

Task 11: Installs, Services and Maintains Bonding and Grounding, Ground Fault Protection and Detection Systems

Sub-Tasks

- Installs bonding and grounding systems
- Installs ground fault protection and detection systems
- Installs lightning protection systems
- Performs servicing and maintenance of bonding and grounding systems

Task 12: Installs, Services and Maintains Power Generation and Conversion Systems

Sub-Tasks

- Installs alternating current (AC) generating systems
- Performs servicing and maintenance of AC generating systems
- Installs direct current (DC) generating and conversion systems
- Performs servicing and maintenance of DC generating and conversion systems

Task 13: Installs, Services and Maintains Renewable Energy Generating and Storage Systems

Sub-Tasks

- Installs renewable energy generating and storage systems
- Performs servicing and maintenance of renewable energy generating and storage systems

MWA B: Installs, Services and Maintains Generating, Distribution and Service Systems (Cont'd)

Task 14: Installs, Services and Maintains High Voltage Systems

Sub-Tasks

- Installs high voltage equipment
- Installs high voltage cables
- Performs servicing and maintenance of high voltage systems

Task 15: Installs, Services and Maintains Transformers

Sub-Tasks

- Installs extra-low voltage transformers
- Installs low voltage single-phase transformers
- Installs low voltage three-phase transformers
- Installs high voltage transformers
- Performs servicing and maintenance of transformers

MWA C: Installs, Services and Maintains Wiring Systems

Task 16: Installs, Services and Maintains Raceways, Conductors, Cables and Enclosures

Sub-Tasks

- Installs conductors and cables
- Installs conduit and fittings
- Installs raceways
- Installs boxes and enclosures
- Performs servicing and maintenance of raceways, cables and enclosures

Task 17: Installs, Services and Maintains Branch Circuitry and Devices

Sub-Tasks

- Installs luminaires
- Installs wiring devices
- Installs lighting controls
- Installs lighting standards
- Performs servicing of branch circuitry
- Installs, services and maintains airport visual aid systems
- Installs, services and maintains traffic signal lights and controls

Task 18: Installs, Services and Maintains Heating, Ventilating and Air-Conditioning (HVAC) Systems

Sub-Tasks

- Connects HVAC systems and associated equipment
- Installs HVAC controls
- Performs servicing and maintenance of HVAC systems and controls

Task 19: Installs, Services and Maintains Electric Heating Systems

Sub-Tasks

- Installs electric heating systems
- Installs electric heating system controls
- Performs servicing and maintenance of electric heating systems and controls

MWA C: Installs, Services and Maintains Wiring Systems (Cont'd)

Task 20: Installs, Services and Maintains Exit and Emergency Lighting Systems

Sub-Tasks

- Installs exit and emergency lighting
- Performs servicing and maintenance of exit and emergency lighting systems

Task 21: Installs, Services and Maintains Cathodic Protection Systems

Sub-Tasks

- Installs cathodic protection systems
- Performs servicing and maintenance of cathodic protection systems

MWA D: Installs, Services and Maintains Motors and Control Systems

Task 22: Installs, Services and Maintains Motor Starters and Controls

Sub-Tasks

- Installs motor starters
- Performs servicing and maintenance of motor starters
- Installs motor control devices
- Performs servicing and maintenance of of motor controls

Task 23: Installs, Services and Maintains Drives

Sub-Tasks

- Installs AC drives
- Performs servicing and maintenance of AC drives
- Installs DC drives
- Performs servicing and maintenance of DC drives

Task 24: Installs, Services and Maintains Motors

Sub-Tasks

- Installs single-phase motors
- Performs servicing and maintenance of single-phase motors
- Installs three-phase motors
- Performs servicing and maintenance of three-phase motors
- Installs DC motors
- Performs servicing and maintenance of DC motors

Task 25: Installs, Programs, Services and Maintains Automated Control Systems

Sub-Tasks

- Installs automated control systems
- Performs servicing and maintenance of automated control systems
- Programs and configures automated control systems

MWA E: Installs, Services and Maintains Signaling and Communication Systems

Task 26: Installs, Services and Maintains Signaling Systems

Sub-Tasks

- Installs fire alarm systems
- Performs servicing and maintenance of fire alarm systems
- Installs security and surveillance systems
- Performs servicing and maintenance of security and surveillance systems

Task 27: Installs, Services and Maintains Communication Systems

Sub-Tasks

- Installs voice/data/video (VDV) and community antenna television (CATV) systems
- Installs public address (PA) and intercom systems
- Installs nurse call systems
- Performs servicing and maintenance of communication systems

Task 28: Installs, Services and Maintains Integrated Control Systems

Sub-Tasks

- Installs building automation systems
- Installs building control systems
- Performs servicing and maintenance of integrated control systems

Create a Study Plan

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

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 journey person 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/apprentices-youth/self-study/study-guides/>

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 is a program that sets common standards to evaluate the skills of tradespeople across Canada. It is a partnership between the Federal Government and the provinces/territories.

The Red Seal model has been based on the National Occupational Analyses (NOA) which supports the development of multiple-choice examinations. A new Red Seal Occupational Standard (RSOS) was introduced in 2015 and is taking the place of the NOA.

<http://www.red-seal.ca/>

Construction Electrician 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.

<http://www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=51>

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/const-elect/self-assessment.pdf

Acronyms

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

<https://www.red-seal.ca/eng/trades/conselectric/app-a.shtml>

List of Tools and Equipment

The Red Seal website also shows a list of Tools and Equipment which can be helpful in preparing for the exam:

<https://www.red-seal.ca/eng/trades/conselectric/app-b.shtml>

Glossary of Terms

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

<https://www.red-seal.ca/eng/trades/conselectric/app-c.shtml>

Resources – Book List

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.

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

- Canadian Electrical Code*, Canadian Standards Association, 2009, ISBN 1553246926*****2012 version is being used now.**
- Delmar's Standard Textbook of Electricity*, 4th Edition, Herman, Stephen L. ISBN 1418065803
- Electrical Motors Controls for Integrated Systems*, 3rd Edition, Rockis, Gary J.Mazur. Glen A, ISBN 0826912079
- Electrical Motors Controls for Integrated Systems (workbook)*, 3rd Edition, ISBN 0826912084
- Electrical Wiring Commercial*, 5th Canadian Edition, Mullin.Miller.Stephenson.Filice. Maltese.Marchetti, ISBN 0176502165
- Electrical Wiring Industrial*, 3rd Canadian Edition, Smith.Herman.Miller.Stephenson.Branch.Granelli, ISBN 0176502149
- Electrical Wiring Residential*, 5th Canadian Edition, Mullin.Miller.Stephenson.Branch.Todd.Trineer, ISBN 0176502157
- Industrial Motor Control*, 5th Edition, Herman, Stephen L, ISBN 1401838022
- IPT's Crane and Rigging Handbook*, 4th Edition, Garby, Roland G, ISBN 0920855016
- IPT's Electrical Handbook*, 4TH Edition, Putz, Herb, ISBN 0920855229
- IPT's Safety First Handbook*, 3rd Edition, Basaraba, Bruce M, ISBN 02920855342

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

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

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, 2nd 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

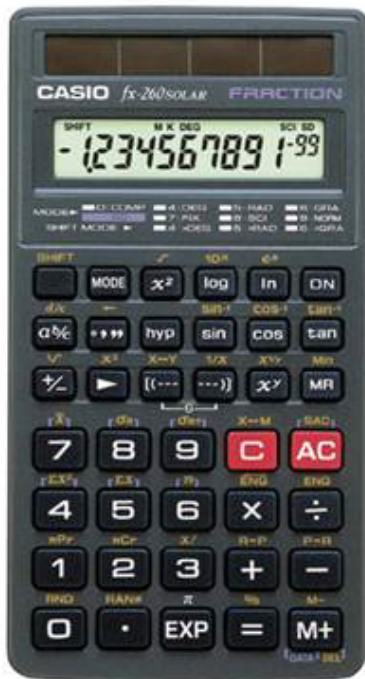
1D Grenfell Drive
P.O. Box 160
Wabush, NL
A0R 1B0

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

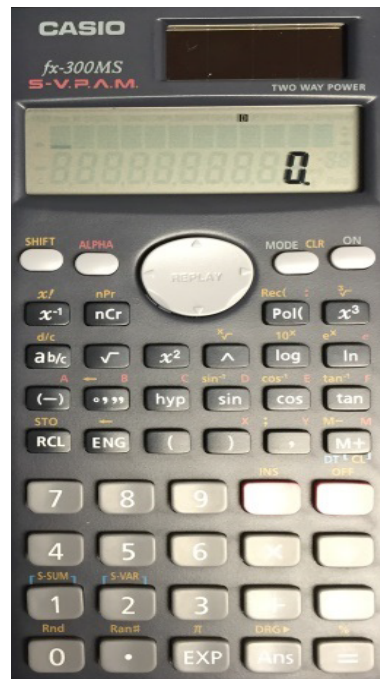
Appendix B: Calculator Use

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

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

Bar Code

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

FEED IN THIS DIRECTION ↑

NAME _____

SUBJECT _____

PERIOD _____ DATE _____

Feedback Form

Study Guide - Construction Electrician

Please answer the following:

- (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:

Additional Comments:

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, Clarenville, NL A5A 1Z4
Fax: (709) 466-3987

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

