

# APPRENTICESHIP & CERTIFICATION

## Study Guide Industrial Electrician



  
Newfoundland  
Labrador

**Apprenticeship and Certification**

**Study Guide**

**Industrial Electrician**

**(Based on 2011 NOA)**

Government of Newfoundland and Labrador  
Department of Advanced Education and Skills  
Apprenticeship and Trades Certification Division

**2011**

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# Table of Contents

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Introduction .....	3
Exam Process .....	4
Before the Exam.....	4
During the Exam.....	4
After the Exam .....	4
Exam Format .....	5
Exam Content.....	9
Understanding the National Occupational Analysis (NOA) .....	9
Exam Breakdown .....	11
NOA Sub-tasks.....	12
Task Profile Checklist .....	13
Create a Study Plan .....	18
Resources - Websites .....	21
Resources – Book List.....	22
Conclusion.....	23
 <b>Appendices</b>	
Appendix A: Regional Offices .....	24
Appendix B: Calculator Use .....	25
Appendix C: Answer Sheet Example .....	26

## Introduction

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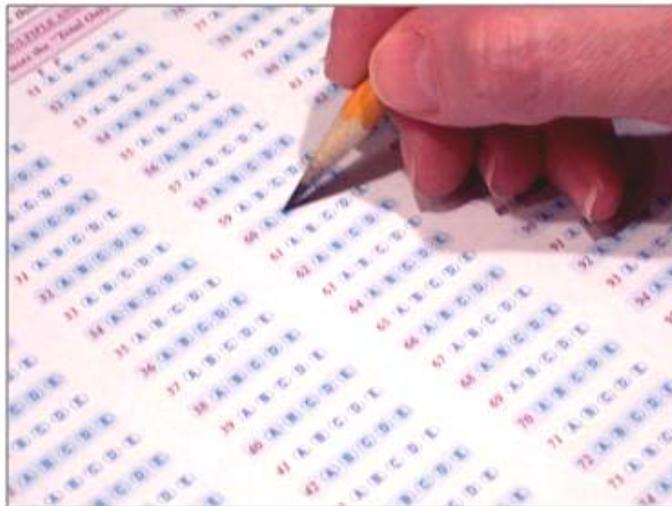
This Study Guide has been developed by the Newfoundland and Labrador Department of Advanced Education and Skills, Apprenticeship and Trades Certification Division, to assist apprentices and trade qualifiers as they prepare to write the Interprovincial (IP) Red Seal Exam. IP Exams are available for all Red Seal trades. For a list of Interprovincial trades please refer to the Department of Advanced Education and Skills website:

[www.ed.gov.nl.ca/app/trades.html](http://www.ed.gov.nl.ca/app/trades.html)

**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 IP Red Seal exam (*See Appendix A for a list of regional offices*). Upon approval, the Program Development Officer (PDO) 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 IP 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 a dashed line between 2 disconnects indicate on a schematic diagram?
  - A. Mechanical interlock.
  - B. Bonding conductor.
  - C. Ground connection.
  - D. Lightning arrester.



2. What do the letters "HRC" on a fuse indicate?

- A. High running current.
- B. Half running capacity.
- C. Half rupture current.
- D. High rupture capacity.



3. When checked with an ohmmeter, a capacitor reads 0 Ω. What is the capacitor's condition?

- A. Open-circuited.
- B. Short-circuited.
- C. Grounded.
- D. Serviceable.



### Level 2 Examples:

1. What is the procedure for testing a high pressure sodium (HPS) lamp socket for power?

- A. Use digital VOM to check from centre contact to ground.
- B. Use digital VOM to check from shell to centre contact.
- C. Use analog VOM to check from centre contact to ground.
- D. Use analog VOM to check from shell to centre contact.



2. In addition to wearing safety boots, which combination of personal protective equipment is utilized when working at a switching substation?
- A. Work gloves, anti-glare safety goggles and glow stick.
  - B. Work gloves, face shield and ear plugs.
  - C. Safety gloves, face shield and glow stick.
  - D. Safety gloves, safety goggles and ear plugs.



3. A three-phase delta connected load is single-phasing because of an open winding. What percentage of its original load could be delivered?
- A. 33.30%.
  - B. 50.00%.
  - C. 66.70%.
  - D. 72.30%.



### Level 3 Examples:

1. A shop has 6 rows of lighting, each with 42 fixtures. During a lighting retrofit it takes 2 electricians 70 minutes to change 1 fixture. How many electricians are required to change all of the fixtures in a 40 hour time period?
- A. 3.
  - B. 8.
  - C. 13.
  - D. 15.



2. What is the minimum size of TW90 copper conductors required to feed a 230V, 5 hp, single-phase motor located 60 m from the distributor centre, without exceeding a 3% voltage drop?

- A. No. 4 AWG.
- B. No. 6 AWG.
- C. No. 8 AWG.
- D. No. 10 AWG.



3. A -10 V to +10 V temperature transmitter is calibrated to measure from -50°C to +300°. At a temperature of +76°C, what is the expected voltage output from the transmitter?

- A. -3.6 V.
- B. -2.8 V.
- C. +2.5 V.
- D. +4.3 V.



**Source of questions:**

[www.red-seal.ca/tr.1d.2ecsdeta.3l@-eng.jsp?tid=123&fid=20](http://www.red-seal.ca/tr.1d.2ecsdeta.3l@-eng.jsp?tid=123&fid=20)

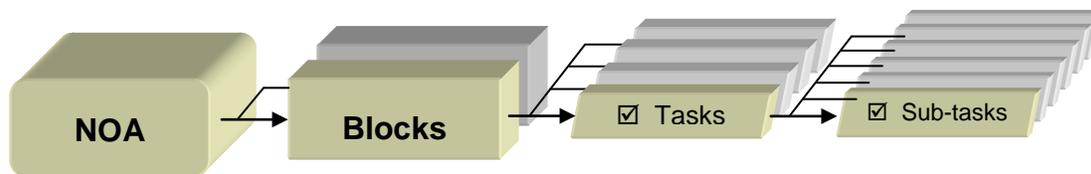
## Exam Content

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### Understanding the *National Occupational Analysis (NOA)*

The NOA is a document used for Red Seal trades that describes the knowledge, skills and abilities required by a fully competent tradesperson working in that trade. The content for the IP Red Seal exam is based on the NOA. The NOA is an excellent tool to use as you study for the Red Seal exam. NOAs can be found at [www.red-seal.ca](http://www.red-seal.ca).

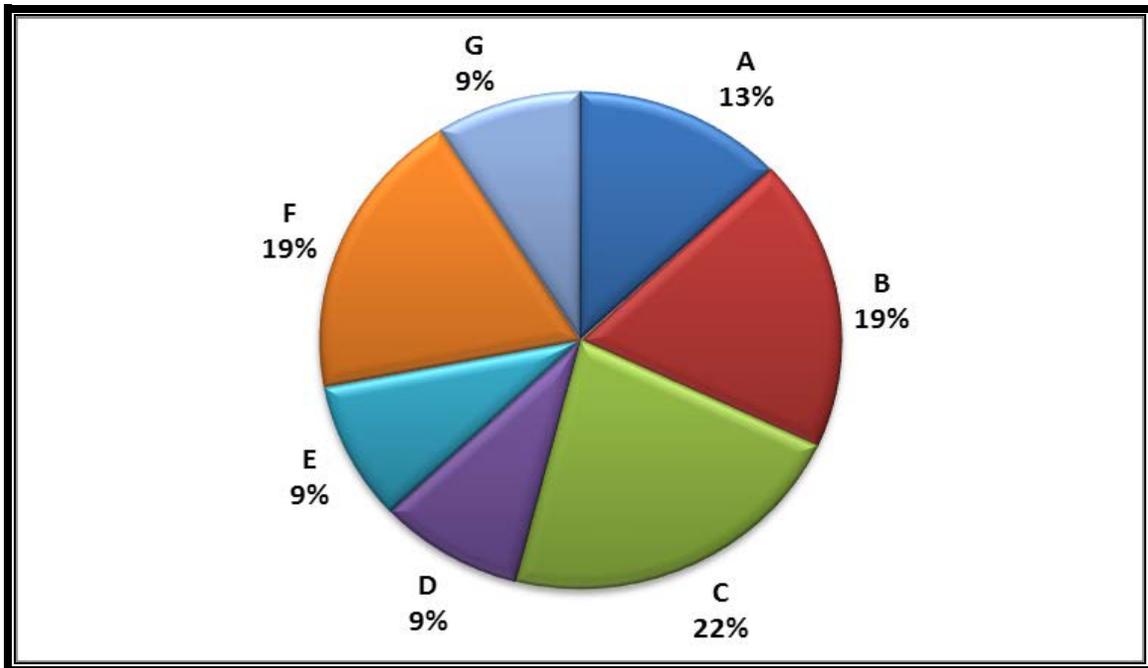
NOA material is organized into major content areas called **BLOCKS**. The blocks are further broken down into **TASKS** and **SUB-TASKS**.



## NOA Pie Chart

The NOA Pie Chart presents the block percentages in the form of a pie chart which tells you the approximate number of questions from each block. For example, 13% of the questions on the **Industrial Electrician** Exam will be based on **Block A**.

### INDUSTRIAL ELECTRICIAN



Block Titles			
<b>Block A</b>	Common Occupational Skills	<b>Block D</b>	Emergency and Standby Systems
<b>Block B</b>	Power Distribution and Generating Systems	<b>Block E</b>	Communication Systems
<b>Block C</b>	Electrical Equipment	<b>Block F</b>	Process Control Systems
		<b>Block G</b>	Building and Environmental Control Systems

## Exam Breakdown

The **Industrial Electrician** exam currently has 100 questions. The following table shows a breakdown of the number of questions that come from each NOA block. 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>Block A</b>	<b>Common Occupational Skills</b>	<b>13</b>
<b>Task 1</b>	Performs safety-related functions	
<b>Task 2</b>	Uses and maintains tools and equipment	
<b>Task 3</b>	Organizes work	
<b>Task 4</b>	Performs routine trade activities	
<b>Block B</b>	<b>Power Distribution and Generating Systems</b>	<b>19</b>
<b>Task 5</b>	Maintains high voltage power distribution systems	
<b>Task 6</b>	Maintains low voltage power distribution systems	
<b>Task 7</b>	Maintains alternating current (AC) systems	
<b>Task 8</b>	Maintains direct current (DC) systems	
<b>Task 9</b>	Maintains grounding and bonding systems	
<b>Task 10</b>	Maintains power generating systems	
<b>Block C</b>	<b>Electrical Equipment</b>	<b>22</b>
<b>Task 11</b>	Maintains equipment, wiring, cabling and terminations	
<b>Task 12</b>	Maintains lighting systems	
<b>Task 13</b>	Maintains protection devices	
<b>Task 14</b>	Maintains rotating equipment and associated controls	
<b>Task 15</b>	Maintains drives and associated controls	
<b>Task 16</b>	Maintains non-rotating equipment and associated controls	
<b>Block D</b>	<b>Emergency and Standby Systems</b>	<b>9</b>
<b>Task 17</b>	Maintains uninterruptible power supply (UPS) systems	
<b>Task 18</b>	Maintains standby power generating systems	
<b>Block E</b>	<b>Communication Systems</b>	<b>9</b>
<b>Task 19</b>	Maintains alarm systems	
<b>Task 20</b>	Maintains paging systems	
<b>Task 21</b>	Maintains multimedia systems ( <b>NOT COMMON CORE</b> )	
<b>Task 22</b>	Maintains network systems	
<b>Block F</b>	<b>Process Control Systems</b>	<b>19</b>
<b>Task 23</b>	Maintains input/output (I/O) field devices	
<b>Task 24</b>	Maintains control systems	
<b>Block G</b>	<b>Building and Environmental Control Systems</b>	<b>9</b>
<b>Task 25</b>	Maintains electrical components of heating and cooling systems	
<b>Task 26</b>	Maintains building automation systems	
<b>Task 27</b>	Maintains environmental control systems	
	<b>Total</b>	<b>100</b>

## NOA Sub-tasks

The following *NOA Task Profile Checklist* outlines the blocks, tasks and sub-tasks for your trade. The IP Red Seal exam is written to test your knowledge and abilities regarding the sub-tasks in the NOA. 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 NOA 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 NOA for your trade.

# Task Profile Checklist

Based on 2011 NOA  
Industrial Electrician

## Block A: Common Occupational Skills

**Task 1: Performs safety-related functions**

*Sub-Tasks*

- Maintains safe work environment
- Uses personal protective equipment (PPE) and safety equipment
- Performs lock-out and tagging procedures

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

*Sub-Tasks*

- Maintains tools and equipment
- Uses access equipment
- Uses rigging, tugging, hoisting and lifting equipment

**Task 3: Organizes work**

*Sub-Tasks*

- Interprets codes and regulations
- Interprets plans, schematics, drawings and specifications
- Selects materials and supplies
- Plans project tasks and procedures
- Prepares work site
- Documents maintenance work

**Task 4: Performs routine trade activities**

*Sub-Tasks*

- Installs fasteners, fittings and connectors
- Conducts operational tests

## Block B: Power Distribution and Generating Systems

### Task 5: Maintains high voltage power distribution systems

- Sub-Tasks**
- Installs high voltage power distribution systems (**NOT COMMON CORE**)
  - Services high voltage power distribution systems
  - Troubleshoots high voltage power distribution systems
  - Repairs high voltage power distribution systems

### Task 6: Maintains low voltage power distribution systems

- Sub-Tasks**
- Installs low voltage power distribution systems
  - Services low voltage power distribution systems
  - Troubleshoots low voltage power distribution systems
  - Repairs low voltage power distribution systems

### Task 7: Maintains alternating current (AC) systems

- Sub-Tasks**
- Installs alternating current (AC) systems
  - Services alternating current (AC) systems
  - Troubleshoots alternating current (AC) systems
  - Repairs alternating current (AC) systems

### Task 8: Maintains direct current (DC) systems

- Sub-Tasks**
- Installs direct current (DC) systems
  - Services direct current (DC) systems
  - Troubleshoots direct current (DC) systems
  - Repairs direct current (DC) systems

### Task 9: Maintains grounding and bonding systems

- Sub-Tasks**
- Installs grounding and bonding systems
  - Services grounding and bonding systems
  - Troubleshoots grounding and bonding systems
  - Repairs grounding and bonding systems

### Task 10: Maintains power generating systems

- Sub-Tasks**
- Installs power generating systems (**NOT COMMON CORE**)
  - Services power generating systems
  - Troubleshoots power generating systems
  - Repairs power generating systems

## Block C: Electrical Equipment

### Task 11: Maintains equipment, wiring, cabling and terminations

#### Sub-Tasks

- Installs electrical wiring, cabling and terminations
- Installs raceways, cable trays, busways and associated components
- Repairs electrical wiring, cabling and terminations
- Maintains seismic restraint systems **(NOT COMMON CORE)**

### Task 12: Maintains lighting systems

#### Sub-Tasks

- Installs lighting systems
- Services lighting systems
- Troubleshoots lighting systems
- Repairs lighting systems

### Task 13: Maintains protection devices

#### Sub-Tasks

- Installs protection devices
- Services protection devices
- Troubleshoots protection devices
- Repairs protection devices

### Task 14: Maintains rotating equipment and associated controls

#### Sub-Tasks

- Installs rotating equipment and associated controls
- Services rotating equipment and associated controls
- Troubleshoots rotating equipment and associated controls
- Repairs rotating equipment and associated controls

### Task 15: Maintains drives and associated controls

#### Sub-Tasks

- Installs drives and associated controls
- Services drives and associated controls
- Troubleshoots drives and associated controls
- Repairs drives and associated controls

### Task 16: Maintains non-rotating equipment and associated controls

#### Sub-Tasks

- Installs non-rotating equipment and associated controls
- Services non-rotating equipment and associated controls
- Troubleshoots non-rotating equipment and associated controls
- Repairs non-rotating equipment and associated controls

## Block D: Emergency and Standby Systems

### Task 17: Maintains uninterruptible power supply (UPS) systems

#### Sub-Tasks

- Installs uninterruptible power supply (UPS) systems
- Services uninterruptible power supply (UPS) systems
- Troubleshoots uninterruptible power supply (UPS) systems
- Repairs uninterruptible power supply (UPS) systems

### Task 18: Maintains standby power generating systems

#### Sub-Tasks

- Installs standby power generating systems
- Services standby power generating systems
- Troubleshoots standby power generating systems
- Repairs standby power generating systems

## Block E: Communication Systems

### Task 19: Maintains alarm systems

#### Sub-Tasks

- Installs alarm systems
- Services alarm systems
- Troubleshoots alarm systems
- Repairs alarm systems

### Task 20: Maintains paging systems

#### Sub-Tasks

- Installs paging systems
- Services paging systems
- Troubleshoots paging systems
- Repairs paging systems

### Task 21: Maintains multimedia systems (NOT COMMON CORE)

#### Sub-Tasks

- Installs multimedia systems (NOT COMMON CORE)
- Services multimedia systems (NOT COMMON CORE)
- Troubleshoots multimedia systems (NOT COMMON CORE)
- Repairs multimedia systems (NOT COMMON CORE)

### Task 22: Maintains network systems

#### Sub-Tasks

- Installs network systems
- Services network systems
- Troubleshoots network systems
- Repairs network systems

## Block F: Process Control Systems

### Task 23: Maintains input/output (I/O) field devices

- Sub-Tasks**
- Installs input/output (I/O) field devices
  - Services input/output (I/O) field devices
  - Troubleshoots input/output (I/O) field devices
  - Repairs input/output (I/O) field devices

### Task 24: Maintains control systems

- Sub-Tasks**
- Installs control systems
  - Services control systems
  - Troubleshoots control systems
  - Repairs control systems
  - Optimizes programmable logic controller (PLC)

## Block G: Building and Environmental Control Systems

### Task 25: Maintains electrical components of heating and cooling systems

- Sub-Tasks**
- Installs electrical components of heating and cooling systems
  - Services electrical components of heating and cooling systems
  - Troubleshoots electrical components of heating and cooling systems
  - Repairs electrical components of heating and cooling systems

### Task 26: Maintains building automation systems

- Sub-Tasks**
- Installs building automation systems
  - Services building automation systems
  - Troubleshoots building automation systems
  - Repairs building automation systems

### Task 27: Maintains environmental control systems

- Sub-Tasks**
- Installs environmental control systems
  - Services environmental control systems
  - Troubleshoots environmental control systems
  - Repairs environmental control systems

## 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 NOA 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 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.

Exam Preparation Guide: [www.ed.gov.nl.ca/app/publications/exam\\_prep\\_guide.pdf](http://www.ed.gov.nl.ca/app/publications/exam_prep_guide.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 an IP 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 NOA.

POT Website: [www.ed.gov.nl.ca/app/plans.html](http://www.ed.gov.nl.ca/app/plans.html)

### Red Seal Website

**National Occupational Analysis** - The NOA is a document used for Red Seal trades that describes the knowledge and abilities required by a fully competent tradesperson working in that trade. The content for the IP exam is based on the NOA.

Red Seal Website: [www.red-seal.ca](http://www.red-seal.ca)

### Industrial Electrician PRACTICE Exam

This is **NOT** an IP exam. This is a practice exam provided by the Inter-provincial Standards Red Seal 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 an IP Exam.

Sample questions can be found at:  
[www.red-seal.ca/tr.1d.2ecsdeta.3l@-eng.jsp?tid=123&fid=20](http://www.red-seal.ca/tr.1d.2ecsdeta.3l@-eng.jsp?tid=123&fid=20)

### Glossary of Terms

The Red Seal website also lists a Glossary of Terms which will be helpful in preparing for your IP exam:  
[www.red-seal.ca/tr.1d.2n.4adeta.3l@-eng.jsp?tid=123&fid=190](http://www.red-seal.ca/tr.1d.2n.4adeta.3l@-eng.jsp?tid=123&fid=190)

## Resources – Book List

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The books listed below are sorted according to NOA 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	BLOCK							
	A	B	C	D	E	F	G	H
Canadian Electrical Code	✓	✓	✓	✓	✓	✓		
Delmar’s Standard Textbook of Electricity	✓			✓				
Electrical Motors Controls for Integrated Systems				✓				
Electrical Motors Controls for Integrated Systems (workbook)				✓				
Electrical Wiring Commercial	✓	✓	✓		✓	✓		
Electrical Wiring Industrial		✓	✓			✓		
Electrical Wiring Residential	✓	✓	✓		✓	✓		
Industrial Motor Control				✓				
IPT’s Crane and Rigging Handbook	✓							
IPT’s Electrical Handbook		✓	✓	✓	✓	✓		
IPT’s Safety First Handbook	✓							

**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
- 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*, 5<sup>th</sup> Canadian Edition, Filice, Maltese, Marchetti, Mullin, Millerand Miller, ISBN 0176502165
- Electrical Wiring Industrial*, 3rd Canadian Edition, Branch, Granelli, Herman, Miller, Smith, and Stephenson, ISBN 0176502149
- Electrical Wiring Residential*, 5<sup>th</sup> Edition, Branch, Miller, Mullin, Stephenson, Todd, and 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 an IP Red Seal Exam. This does not mean the Department of Advanced Education and Skills, 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 an IP Red Seal exam. The Department of Advanced Education and Skills 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 IP Red Seal exam. If you have any questions regarding your IP 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 IP Red Seal exam, please contact one of the following regional offices:

Department of Advanced Education and Skills  
Apprenticeship and Trades Certification Division  
Toll Free: 1-877-771-3737  
[www.ed.gov.nl.ca/app/](http://www.ed.gov.nl.ca/app/)

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

Clareville
45 Tilley's Road Clareville, 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 Burse Building Happy Valley – Goose Bay, NL A0P 1E0
Telephone: (709) 896-6348 Facsimile: (709) 896-3733

## ***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.



# 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.

1 (A B C D E) 26 (A B C D E) 51 (A B C D E) 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
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

**PERFORMANCE ASSESSMENT**

ROSTER #	% OF TOTAL SCORE		POINTS EARNED	
	0%	100%	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

**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

**NUMBER CORRECT**  
**PERCENT CORRECT**  
**ROSTER NUMBER**  
**SCORE**  
**RESCORE**

**COMBINED POINTS EARNED**  
**COMBINED PERCENT CORRECT**  
**LETTER GRADE**  
**SCORE**  
**RESCORE**

NAME \_\_\_\_\_  
 SUBJECT \_\_\_\_\_  
 PERIOD \_\_\_\_\_ DATE \_\_\_\_\_

## Feedback Form

### Study Guide - Industrial Electrician

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 Advanced Education and Skills  
Apprenticeship and Trades Certification Division  
Standards and Curriculum Unit  
45 Tilley's Road, Clarenville, NL A5A 1Z4  
Fax: (709) 466-3987

