

APPRENTICESHIP & CERTIFICATION

Study Guide Refrigeration and Air Conditioning Mechanic




Newfoundland
Labrador

Apprenticeship and Certification

Study Guide

Refrigeration and Air Conditioning Mechanic

(Based on 2014 NOA)

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

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Introduction

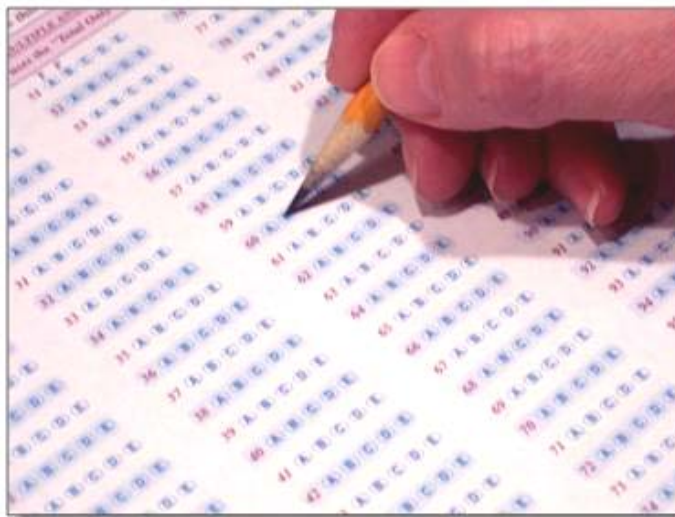
This Study Guide has been developed by the Newfoundland and Labrador Department of Advanced Education, Skills and Labour, Apprenticeship and Trades Certification Division, to assist apprentices and trade qualifiers as they prepare to write the Interprovincial (IP) Red Seal Exam. IP Exams are available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

<https://www.aesl.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

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 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

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.

On the following pages, examples of each of the three types of questions are provided.

Level 1 Examples:

1. When constructing a walk-in freezer box, where is the installation of the vapor barrier present?
 - A. Inside on the coldest side.
 - B. Outside on the warmest side.
 - C. Around door sill only.
 - D. Only required in floor and ceiling construction.



2. What is an indication of a plugged metering device?

- A. High suction pressure.
- B. High suction gas superheat.
- C. No condenser subcooling.
- D. High discharge gas temperature.



3. What is the principal function of the expansion tank in a hot water system?

- A. It allows the volume of the water in the system to change to maintain working pressure.
- B. It collects the air in the system, thus preventing air lock of the system while in operation.
- C. It provides the necessary space for the air required in the system.
- D. It acts as a safety chamber in case of over firing of the boiler.



Level 2 Examples:

1. What amperage capacity should the supply wiring be rated for a refrigerated fixture which has a 208V power supply and the following loads?

- 4 Evaporator fan motors rated at 9 W each
- 2 Defrost heaters rated at 6 A each
- 6 Fluorescent lights rated at 40 W each
- 1 strip mullion heater rated at 3 A

- A. 15 A.
- B. 20 A.
- C. 30 A.
- D. 40 A.



2. When testing a compressor motor winding with a megger, what reading would indicate a good clean system?
- A. 2000 megaohms.
 - B. 0.0002 megaohms.
 - C. Zero megaohms.
 - D. Infinity.



3. Which three instruments are required to check the calibration of an enthalpy control on the economizer of a rooftop air conditioning unit?
- A. Voltmeter, ammeter and ohmmeter.
 - B. Manometer, Pitot tube and thermometer.
 - C. Draft gauge, manometer and thermometer.
 - D. Thermometer, sling psychrometer and ultrameter.



Level 3 Examples:

1. What is the minimum required sleeve size when installing a 50 mm (2 in.) nominal pipe with 38 mm (1 ½ in.) insulation through a 200 mm (8 in.) concrete block exterior wall?
- A. 50 mm/2 in.
 - B. 100 mm/4 in.
 - C. 150 mm/6 in.
 - D. 200 mm/8 in.



2. What is the cooling capacity of a water chiller operating with a 4.4°C (40°F) evaporating temperature, return water temperature of 10°C (50°F) and a 7.2°C (45°F) supply water temperature if the water flow rate is measured at 682.5 L/min (150 gal./min)?

- A. 87 000 W/ 300 000 Btu/h.
- B. 109 875 W/ 375 000 Btu/h.
- C. 131 850 W/ 450 000 Btu/h.
- D. 153 825 W/ 525 000 Btu/h.



3. When diagnosing the motor windings of a hermetic compressor, the following values are noted:

Common-to-start: 18 Ω

Start-to-run 21 Ω

What should the common-to-run value be?

- A. 3 Ω .
- B. 18 Ω .
- C. 21 Ω .
- D. 39 Ω .



Source of Questions:

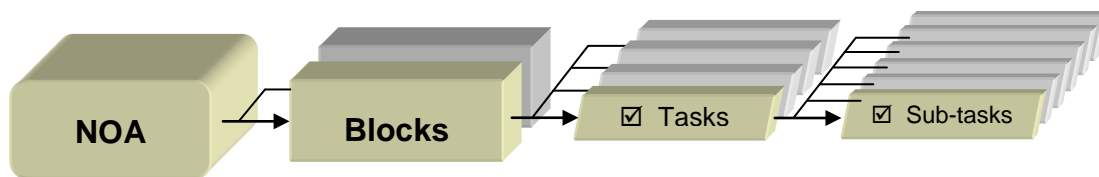
www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=202

Exam Content

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.

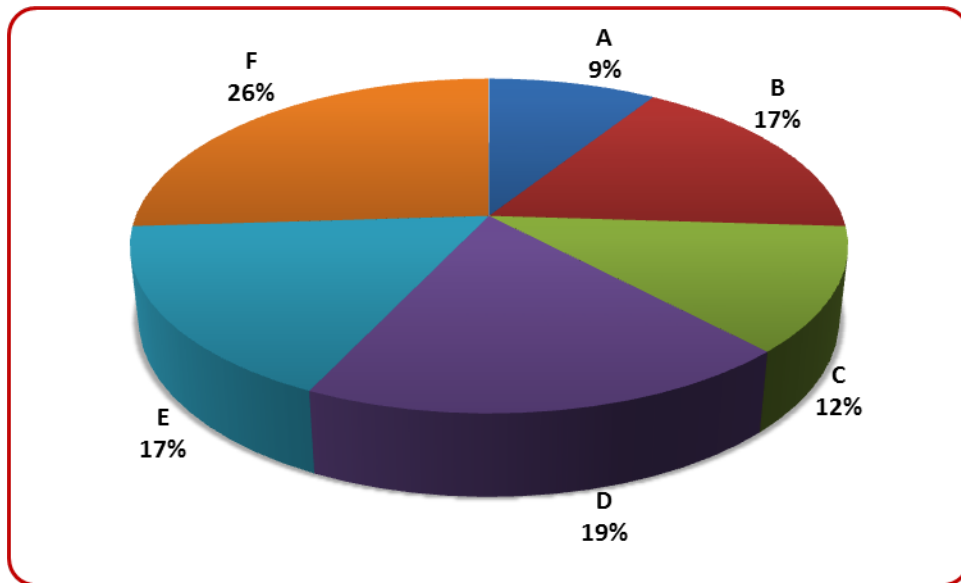
NOA material is organized into major content areas called **BLOCKS**. The blocks are further broken down into **TASKS** and **SUB-TASKS**.



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, 9% of the questions on the **Refrigeration and Air Conditioning Mechanic** Exam will be based on **Block A**.

Refrigeration and Air Conditioning Mechanic



BLOCK TITLES			
Block A	Occupational Skills	Block D	Commissioning
Block B	Installation Planning	Block E	Maintenance and Service
Block C	Installation		

Exam Breakdown

The **Refrigeration and Air Conditioning Mechanic** IP Red Seal Exam has 125 questions. The following table shows a breakdown of the approximate number of questions that come from each NOA block. 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
Block A	Common Occupational Skills	11
Task 1	Performs safety related functions	
Task 2	Uses and maintains tools and equipment	
Task 3	Organizes work	
Block B	Routine Trade Activities	18
Task 4	Performs work site preparation	
Task 5	Performs routine trade activities	
Block C	Installation Planning	17
Task 6	Plans installation of HVAC/R systems	
Task 7	Plans installation of control systems	
Block D	Installation	23
Task 8	Installs HVAC/R systems	
Task 9	Installs control systems	
Block E	Commissioning	21
Task 10	Commissions HVAC/R systems	
Task 11	Commissions control systems	
Block F	Maintenance and Service	35
Task 12	Maintains HVAC/R systems	
Task 13	Services HVAC/R systems	
Task 14	Maintains and services control systems	
	Total	125

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 2014 NOA Refrigeration and Air Conditioning Mechanic

Block A: Common Occupational Skills

Task 1: Performs Safety Related Functions

Sub-Tasks

- Maintains safe work environment
- Performs lock-out, tag-out and isolation procedures
- Uses personal protection equipment (PPE) and safety equipment

Task 2: Uses and Maintains Tools and Equipment

Sub-Tasks

- Maintains hand tools
- Maintains portable and stationary power tools
- Maintains brazing and soldering equipment
- Maintains recovery and recycling equipment
- Maintains evacuation tools and equipment
- Maintains charging tools and equipment
- Maintains diagnostic and measuring tools and equipment
- Uses access equipment
- Uses rigging, hoisting and lifting equipment
- Uses digital technology

Task 3: Organizes Work

Sub-Tasks

- Interprets codes, regulations and procedures
- Interprets blueprints and specifications
- Uses documentation and reference material
- Plans job tasks and procedures
- Communicates with others

Block B: Routine Trade Activities

Task 4: Performs Work Site Preparation

Sub-Tasks

- Prepares work site
- Handles materials and supplies
- Installs fasteners, brackets and hangers

Task 5: Performs Routine Trade Activities

Sub-Tasks

- Uses refrigerants, gases and oils
- Performs brazing and soldering
- Performs leak and pressure tests on system
- Evacuates systems
- Performs field wiring of systems
- Applies sealants and adhesives

Block C: Installation Planning

Task 6: Plans Installation HVAC/R Systems

Sub-Tasks

- Verifies HVAC/R system parameters and requirements
- Selects HVAC/R equipment, components and accessories
- Determines placement of HVAC/R equipment, components and accessories
- Performs HVAC/R material take-off

Task 7: Plans Installation of Control Systems

Sub-Tasks

- Verifies control system parameters and requirements
- Selects control system components and accessories
- Determines placement of control system components and accessories
- Performs control system take off

Block D: Installation

Task 8: Installs HVAC/R Systems

Sub-Tasks

- Confirms system layout
- Assembles HVAC/R equipment, components and accessories
- Places HVAC/R equipment, components and accessories
- Installs HVAC/R piping and tubing
- Applies HVAC/R holding charge

Task 9: Installs Control Systems

Sub-Tasks

- Places control system components
- Connects system wiring and control tubing

Block E: Commissioning

Task 10: Commissions HVAC/R Systems

Sub-Tasks

- Performs pre start-up checks HVAC/R systems
- Starts up of HVAC/R systems
- Completes HVAC/R system charge
- Sets up primary and secondary HVAC/R components

Task 11: Commissions Control Systems

Sub-Tasks

- Performs start-up checks for control systems
- Verifies/sets operating parameters

Block F: Maintenance and Service

Task 12: Maintains HVAC/R Systems

Sub-Tasks

- Inspects HVAC/R systems
- Performs predictive and scheduled maintenance on HVAC/R systems
- Tests HVAC/R system components and accessories

Task 13: Services HVAC/R Systems

Sub-Tasks

- Trouble-shoots HVAC/R systems
- Repairs HVAC/R systems

Task 14: Maintains and Services Control Systems

Sub-Tasks

- Performs maintenance on control systems
- Troubleshoots control systems
- Repairs control systems
- Calibrates operating and safety controls

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 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

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 journeyperson 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 website: www.aesl.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.aesl.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

Refrigeration and Air Conditioning Mechanic 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.

Practice Exam Website:

www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=202

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/trades/refridgacmech/2014n.4.1.1ppb_gl.4ss.1ry-eng.html

Resources – Book List

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	Block B	Block C	Block D	Block E
<i>Modern Refrigeration and Air Conditioning</i> , 18 th edition	✓	✓	✓	✓	✓
<i>Modern Refrigeration and Air Conditioning</i> , 1 st edition	✓	✓	✓	✓	✓
<i>Refrigeration & Air Conditioning Technology</i> , 4 th edition	✓	✓	✓	✓	✓
<i>Heating and Cooling Essentials</i>	✓	✓	✓	✓	✓
<i>Ozone Depleting Substance Regulations</i>	✓				
<i>Electricity and Controls for HVAC/R</i> , 4 th edition	✓	✓	✓	✓	✓
<i>Practical Problems in Mathematics for Heating and Cooling Technicians</i> , 4 th edition	✓				
<i>Mechanical Refrigeration Code B52-05</i>	✓	✓	✓	✓	✓
<i>Canadian Electrical Code Part I 2009 W/Pocket guide</i>	✓	✓	✓	✓	✓
<i>Blueprints and Plans for HVAC</i> , 3 rd edition	✓				
<i>BTU Buddy</i>					✓
<i>Understanding Electricity and Wiring Diagrams</i> , 1 st edition		✓	✓	✓	✓
<i>Guide to the HVAC/R Certification and Competency Tests</i> , 2 nd edition	✓	✓	✓	✓	✓

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

- Modern Refrigeration and Air Conditioning*, 18th edition, Althouse, A.D., Bracciano, A.F., and Turnquist, C.H., ISBN
- Modern Refrigeration and Air Conditioning*, 1st edition, McGraw-Hill Professional, 1988, Althouse, A.D., ISBN 978-0830628810
- Refrigeration & Air Conditioning Technology*, 4th edition, Delmar Cengage Learning, 1999, Johnson, B., ISBN 978-0766806672
- Heating and Cooling Essentials*, Goodheart Wilcox, Killinger, J. and Killinger, L., ISBN 978-1566374330
- Ozone Depleting Substance Regulations*, Environmental Act (O.C. 97-635), Newfoundland Regulations 120/97, www.assembly.nl.ca/legislation/sr/annualregs/1997/Nr970120.htm
- Electricity and Controls for HVAC/R*, 4th edition, Delmar Cengage Learning, 2000, Herman, S., and Sparkman, B., ISBN 978-0766817388
- Practical Problems in Mathematics for Heating and Cooling Technicians*, 4th edition, Delmar Cengage Learning, 2004, Devore, R. B., ISBN 978-1401841775
- Mechanical Refrigeration Code B52-05*, Canadian Standards Association, 2005, Product ID 2018325
- Canadian Electrical Code Part I 2009 W/Pocket guide*, Canadian Standards Association, 21st edition,
- Blueprints and Plans for HVAC*, 3rd edition, Moeavek, ISBN 978-1428335202
- BTU Buddy*, ISBN 978-1428324282
- Understanding Electricity and Wiring Diagrams*, 1st edition, ISBN 0-13-517897-5
- Guide to the HVAC/R Certification and Competency Tests*, 2nd edition, Featherstone and Riojas, ISBN 0-13-114949-0

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, Skills and Labour, 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, Skills and Labour 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 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

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

Department of Advanced Education, Skills and Labour
Apprenticeship and Trades Certification Division

Toll Free: 1-877-771-3737

www.aesl.gov.nl.ca/app/contact.html

Corner Brook
1-3 Union Street Aylward Building, 2 nd 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

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.



Appendix C: Answer Sheet Example

With your exam you will be given an answer sheet like 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 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

PERFORMANCE ASSESSMENT
 % OF TOTAL SCORE (00 = 100%)
 POINTS EARNED

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
 A B C D E
 Fill oval completely
 A B C D E
 Erase cleanly

STUDENT ID NUMBER

NAME _____
 SUBJECT _____
 PERIOD _____ DATE _____

Feedback Form
Study Guide – Refrigeration and Air Conditioning Mechanic

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

