APPRENTICESHIP & CERTIFICATION

Study Guide
Auto Body and Collision Technician
formerly Motor Vehicle Body Repairer (Metal and Paint)

Department of Advanced Education, Skills and Labour

Newfoundland Labrador

Apprenticeship and Certification
Study Guide

Auto Body and Collision Technician

formerly Motor Vehicle Body Repairer (Metal and Paint)
(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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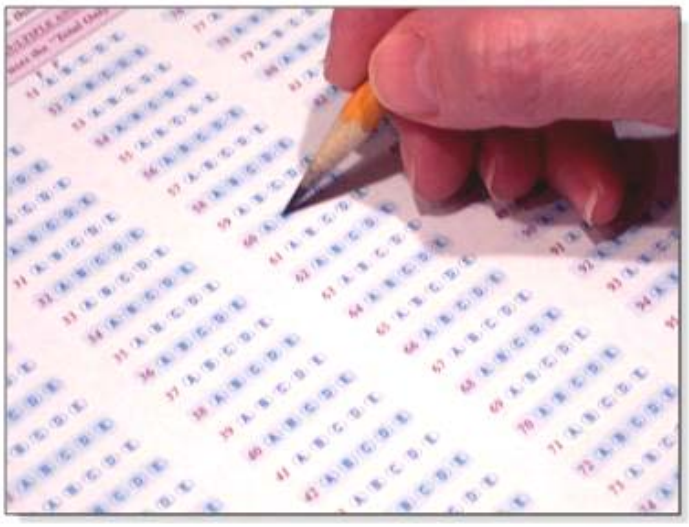
Introduction

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. Which component is aligned first when repairing a vehicle with severe side or rear collision damage?

   A. Front door.
   B. Rear door.
   C. Front door window.
   D. Rear door window.

2. What term describes the ability to stretch metal material and have metal material return to its original shape?

   A. Elastic deformation.
   B. Tensile strength.
   C. Work hardening.
   D. Yield strength.

3. What information must be known before setting up a uni-body vehicle on a frame machine?

   A. Gross vehicle weight.
   B. Ride height of vehicle.
   C. Type of vehicle suspension.
   D. Reference measurement points.

Level 2 Examples:

1. How are spot welds located on the underside of an apron?

   A. Heat the undercoat with a torch.
   B. Visually inspect with a trouble light.
   C. Grind the surface with an angle grinder.
   D. Clean factory seams with a heat gun and scraper.

2. What is done when a high strength steel rocker panel is severely buckled or torn?

   A. The entire panel is replaced.
   B. The damaged area is replaced.
   C. The damaged area is repaired without heat.
   D. The damaged area is hammered and MIG welded.

3. Why is fiberglass body filler used over areas where welding has been performed?

   A. It enhances the structural integrity of the vehicle.
   B. It does not absorb moisture.
   C. It is easier to sand than body filler.
   D. It hides poorly welded joints and plugs.

Level 3 Examples:

1. Which type of damage is caused by loose objects as they move about during a collision?

   A. Mass.
   B. Primary.
   C. Centrifugal.
   D. Secondary.

2. What is the result of overheating a frame rail when removing sharp buckles?

   A. Softening of the metal.
   B. Cracking of the metal.
   C. Sagging of the metal.
   D. Annealing of the metal.

3. How is strength increased without adding weight to a body panel?

   A. Stressing the metal.
   B. Crowning and ridging.
   C. Using inner panel construction.
   D. Using aluminum reinforcements.

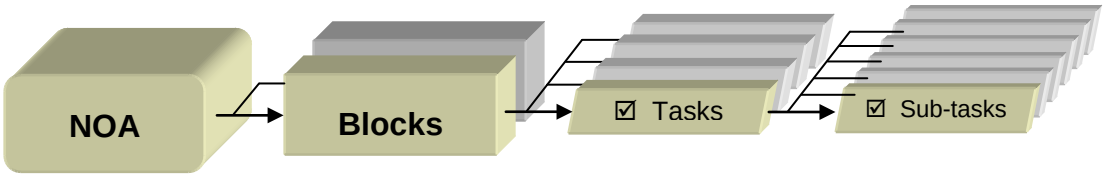
Source of questions:
www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=149

Exam Content

Understanding the *National Occupational Analysis* (NOA)

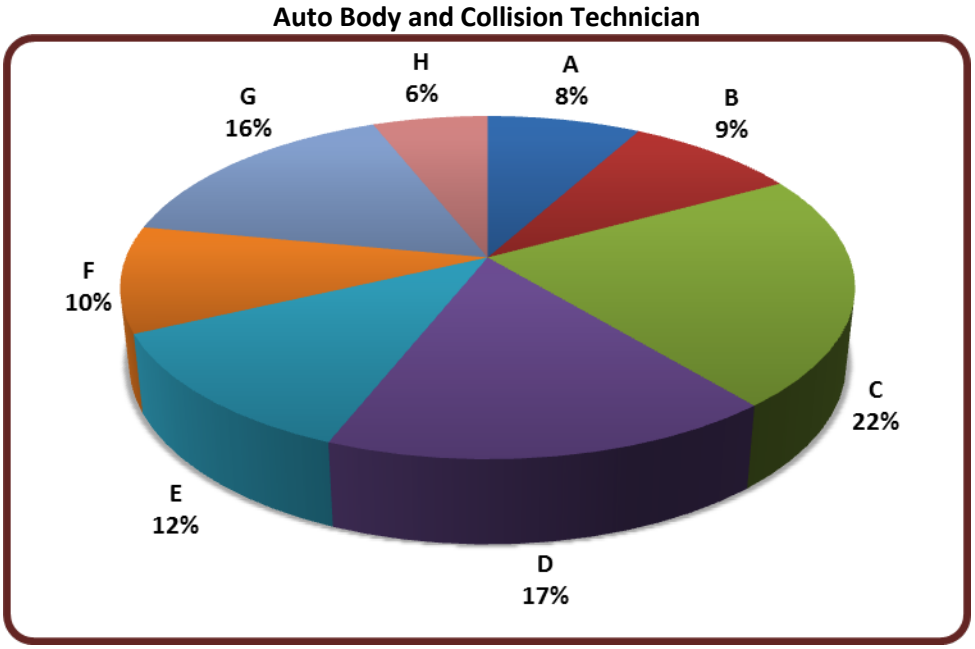
The NOA is a document used for Red Seal trades that describes the knowledge, skills and abilities required by a fully competent tradesperson working in that trade. The content for the IP Red Seal exam is based on the NOA. The NOA is an excellent tool to use as you study for the Red Seal exam. NOAs can 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, 12% of the questions on the **ABCT** Exam will be based on **Block A**.



BLOCK TITLES			
Block A	Common Occupational Skills	**Block E**	Mechanical, Electrical and Alternate Fuel System Components
Block B	Routine Trade Tasks	**Block F**	Restraint System and Interior Components
Block C	Frame and Structural Components	**Block C**	Refinishing
Block D	Non-Structural Outer Body Panels and Related Components	**Block H**	Detailing and Cleaning

Exam Breakdown

The **Auto Body and Collision Technician** IP Red Seal Exam has 120 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	Uses and maintains welding equipment	
Block B	**Routine Trade Tasks**	**10**
Task 4	Organizes work and uses documentation	
Task 5	Applies corrosion protection and sound deadening materials	
Task 6	Removes and installs trim and weather strips	
Task 7	Performs inspection	
Block C	**Frame and Structural Components**	**27**
Task 8	Prepares for repair and replacement of structural components	
Task 9	Repairs, removes and installs structural components	
Task 10	Removes, installs and repairs structural glass	
Block D	**Non-Structural Outer Body Panels and Related Components**	**20**
Task 11	Removes, repairs and installs metal panels and components	
Task 12	Removes, repairs and installs plastic and composite panels and components	
Task 13	Removes and installs non-structural glass	
Block E	**Mechanical, Electrical and Alternate Fuel System Components**	**14**
Task 14	Deactivates and reactivates alternate-fuel systems	
Task 15	Removes and installs mechanical components	
Task 16	Removes, repairs and installs electrical components	
Block F	**Restraint System and Interior Components**	**12**
Task 17	Repairs and replaces interior components	
Task 18	Services supplemental restraint systems (SRS)	
Block G	**Refinishing**	**19**
Task 19	Prepares surfaces	
Task 20	Uses fillers, primers and surfacers	
Task 21	Prepares and applies refinishing materials	
Block H	**Detailing and Cleaning**	**7**
Task 20	Details exterior	
Task 21	Cleans vehicle	
	Total	**120**

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
Auto Body and Collision Technician

Block A: Occupational Skills

☐ **Task 1: Performs Safety Related Functions**

Sub-Tasks

- ☐ Uses personal protective equipment (PPE) and safety equipment
- ☐ Maintains safe work environment

☐ **Task 2: Uses and Maintains Tools and Equipment**

Sub-Tasks

- ☐ Maintains hand and power tools
- ☐ Maintains frame and unibody repair and measuring equipment
- ☐ Uses lifting equipment
- ☐ Maintains refinishing tools and equipment

☐ **Task 3: Uses and Maintains Welding Equipment**

Sub-Tasks

- ☐ Uses welding equipment
- ☐ Maintains welding equipment

Block B: Routine Trade Tasks

☐ **Task 4: Organizes Work and Uses Documentation**

Sub-Tasks

- ☐ Prepares estimates and supplements
- ☐ Prepares repair procedures/plans
- ☐ Organizes parts, materials and work area

☐ **Task 5: Applies Corrosion Protection and Sound Deadening Materials**

Sub-Tasks

- ☐ Applies corrosion inhibitors and undercoats
- ☐ Applies seam sealers and sound deadeners
- ☐ Applies corrosion protection for electrical components

Block B: Routine Trade Tasks (Cont'd)

☐ **Task 6: Removes and Installs Trim and Weather Strips**

Sub-Tasks

- ☐ Removes trim and weather strips
- ☐ Installs trim and weather strips

☐ **Task 7: Performs Inspection**

Sub-Tasks

- ☐ Performs quality control checks
- ☐ Performs final operational checks

Block C: Frame and Structural Components

☐ **Task 8: Prepares for Repair and Replacement of Structural Components**

Sub-Tasks

- ☐ Identifies extent of damage
- ☐ Removes components for access
- ☐ Performs vehicle setup

☐ **Task 9: Repairs, Removes and Installs Structural Components**

Sub-Tasks

- ☐ Repairs structural components
- ☐ Removes structural components
- ☐ Installs structural components

☐ **Task 10: Removes, Installs and Repairs Structural Glass**

Sub-Tasks

- ☐ Removes structural glass
- ☐ Installs structural glass
- ☐ Repairs laminated glass

Block D: Non-Structural Outer Body Panels and Related Components

☐ **Task 11: Removes, Repairs and Installs Metal Panels and Components**

Sub-Tasks

- ☐ Prepares metal panels for repair
- ☐ Removes metal panels and components
- ☐ Repairs metal panels and components
- ☐ Installs metal panels and components

☐ **Task 12: Removes, Repairs and Installs Plastic and Composite Panels and Components**

Sub-Tasks

- ☐ Prepares plastic and composite panels and components for repair
- ☐ Removes plastic and composite panels and components
- ☐ Repairs plastic and composite panels and components
- ☐ Installs plastic and composite panels and components

☐ **Task 13: Removes and Installs Non-Structural Glass**

Sub-Tasks

- ☐ Removes non-structural glass
- ☐ Installs non-structural glass

Block E: Mechanical, Electrical and Alternate Fuel System Components

☐ **Task 14: Deactivates and Reactivates Alternate-Fuel Systems**

Sub-Tasks

- ☐ Deactivates alternate-fuel systems
- ☐ Reactivates alternate-fuel systems

☐ **Task 15: Removes and Installs Mechanical Components**

Sub-Tasks

- ☐ Removes mechanical components
- ☐ Installs mechanical components

Block E: Mechanical, Electrical and Alternate Fuel System Components (Cont'd)

☐ **Task 16: Removes, Repairs and Installs Electrical Components**

Sub-Tasks

- ☐ Removes electrical components
- ☐ Repairs damaged wires and exterior coverings
- ☐ Installs electrical components

Block F: Restraint System and Interior Components

☐ **Task 17: Repairs and Replaces Interior Components**

Sub-Tasks

- ☐ Repairs interior components
- ☐ Replaces interior components

☐ **Task 18: Services Supplemental Restraint Systems (SRS)**

Sub-Tasks

- ☐ Services seat belt restraint systems
- ☐ Services air bags and related components

Block G: Refinishing

☐ **Task 19: Prepares Surfaces**

Sub-Tasks

- ☐ Decontaminates area
- ☐ Sands surfaces
- ☐ Masks off surrounding area

☐ **Task 20: Uses Fillers, Primers and Surfacers**

Sub-Tasks

- ☐ Mixes fillers, primers and surfacers
- ☐ Applies fillers, primers and surfacers

Block G: Refinishing (Cont'd)

☐ **Task 21: Prepares and Applies Refinishing Materials**

Sub-Tasks

- ☐ Mixes refinishing materials
- ☐ Performs final wash and tack
- ☐ Applies material to surface
- ☐ Removes masking

Block H: Detailing and Cleaning

☐ **Task 22: Details Exterior**

Sub-Tasks

- ☐ Removes overspray and imperfections
- ☐ Polishes vehicle
- ☐ Installs decals and striping and emblems
- ☐ Touches up stone chips

☐ **Task 23: Cleans Vehicle**

Sub-Tasks

- ☐ Cleans exterior
- ☐ Cleans interior

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***

Motor Vehicle Body Repairer (Metal and Paint) 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/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=149

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/mvbrmetalpaint/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	Block F	Block G	Block H
Auto Body Repair Technology, 5th edition	✓	✓	✓	✓	✓	✓	✓	✓
I-Car Professional Automotive Collision Repair, 2nd edition	✓	✓	✓	✓	✓	✓	✓	✓
Estimating for Collision Repair, 1st edition	✓	✓	✓	✓	✓		✓	
Today's Technician: Automotive Electricity and Electronics, 2nd edition					✓	✓		
Welding for Collision Repair, 1st edition	✓	✓	✓					
Painting for Collision Repair, 1st edition							✓	✓

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

- ☐ *Auto Body Repair Technology*, 5th edition, Delmar Cengage Learning, 2003, Duffy, J.E., ISBN 1-4180-7353-9
- ☐ *I-Car Professional Automotive Collision Repair*, 2nd edition, Delmar Cengage Learning, 2000, Duffy, J.E., ISBN 978-0766813984
- ☐ *Estimating for Collision Repair,* 1st edition, Delmar Cengage Learning, 1998, Crandell, M., ISBN 978-0766808911
- ☐ *Today's Technician: Automotive Electricity and Electronics*, 2nd edition, Delmar Publishers, 1997, Erjavec, J., and Hollembeak, B., ISBN 978-0827376359
- ☐ *Welding for Collision Repair,* 1st edition, Delmar Cengage Learning, 1998, Jeffus, L., ISBN 978-0766809666
- ☐ *Painting for Collision Repair,* Delmar, 1999, Crandell, M., ISBN 0-7668-0905-6

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, 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

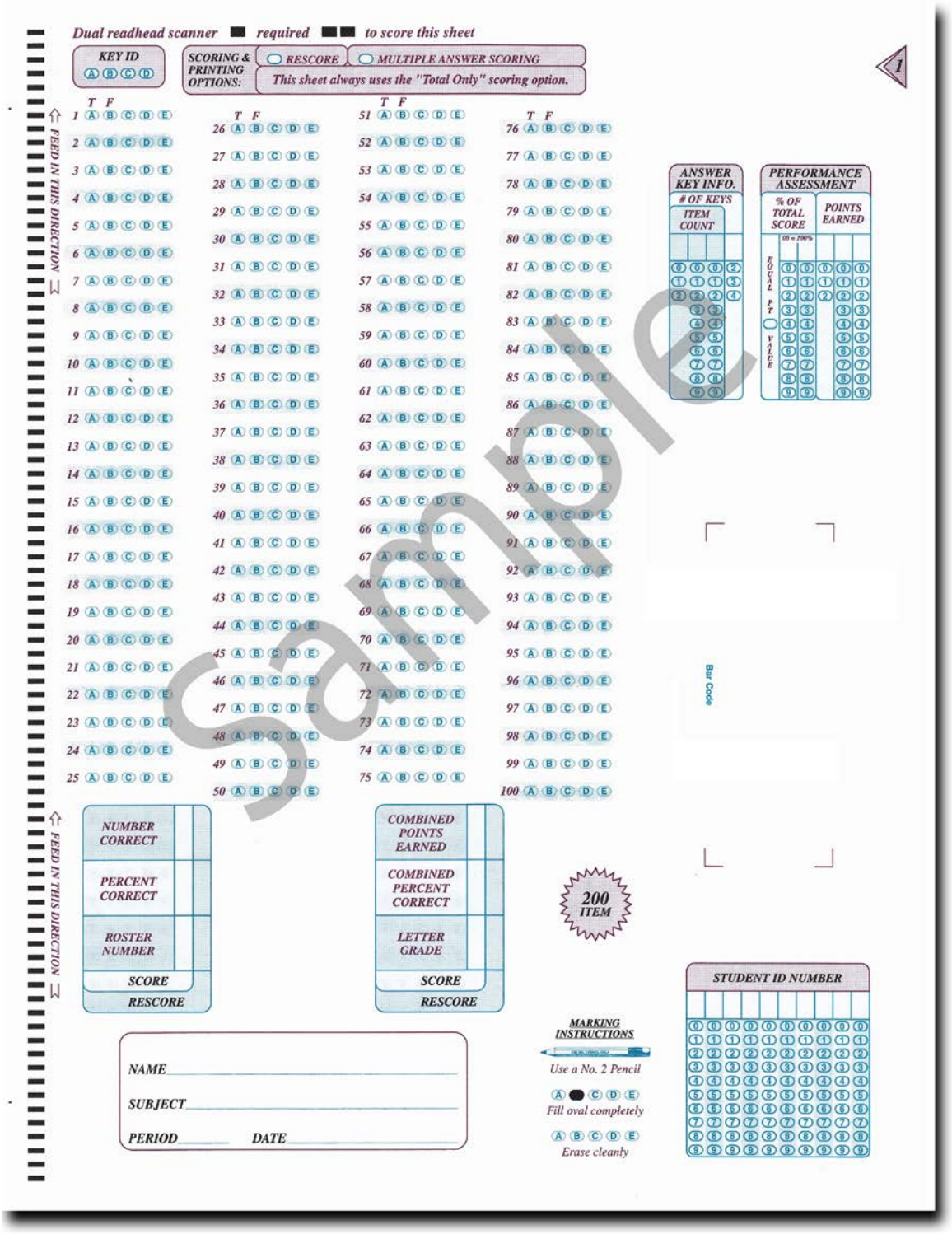
Happy Valley – Goose Bay
163 Hamilton River Road Bursey Building Happy Valley – Goose Bay, NL A0P 1E0 Telephone: (709) 896-6348 Facsimile: (709) 896-3733

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.



Feedback Form
Study Guide – Auto Body and Collision Technician

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

Newfoundland
Labrador