

# Instrumentation and Control Technician

## Interprovincial Journeyperson Examination Information

|                                   |                         |
|-----------------------------------|-------------------------|
| <b>Apprentice Requirements:</b>   | 4 years and 6800 hours  |
| <b>Tradesperson Requirements:</b> | 6 years and 10200 hours |
| <b>Practical Examination:</b>     | No                      |

The Interprovincial (IP) Journeyperson Examination for this trade is developed by a national committee of worker and employer representatives. The content for IP Examinations is drawn from the Red Seal Occupational Standard (RSOS) for that trade and is based on industry's standards and expectations. You can download and print a free copy of the RSOS from the Red Seal website by visiting [www.red-seal.ca](http://www.red-seal.ca).

To write the interprovincial journeyperson examination, you must either successfully complete an apprenticeship training program or meet tradesperson eligibility requirements. The pass mark is 70%.

### Red Seal Examination preparation resources:

To assist in the understanding of the development of all Interprovincial Red Seal examinations, Employment and Social Development Canada (ESDC) has developed the following information.

- A short explanation of the role of an occupational standard in the development of a Red Seal examination can be accessed on the Red Seal website at the following link: <http://www.red-seal.ca/resources/wh.1t.3sn.4.1-eng.html>
- The Getting Ready for the Examination document can be accessed through the Red Seal website at the following link: <http://www.red-seal.ca/docms/getready-eng.pdf>
- Red Seal examination sample questions can be accessed on the Red Seal website at the following link: [http://www.red-seal.ca/resources/s.1mpl.2\\_q.5.2st.3.4ns-eng.html](http://www.red-seal.ca/resources/s.1mpl.2_q.5.2st.3.4ns-eng.html)
- A trade specific skills assessment tool is available on the Red Seal website at the following link: [https://www.red-seal.ca/eng/trades/130\\_instrumentation\\_and\\_control\\_technician/.2x.1m\\_cs.shtml](https://www.red-seal.ca/eng/trades/130_instrumentation_and_control_technician/.2x.1m_cs.shtml)

Use of cell phones, electronic imaging/recording or communication equipment is **not** permitted. You will be required to leave immediately if any of these items are found on your person.

Please note that examinations and study information change frequently. The most recent information is available on our website at [www.saskapprenticeship.ca](http://www.saskapprenticeship.ca).

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## Red Seal Examination Breakdown

An Interprovincial Red Seal examination is based on the Red Seal Occupational Standard (RSOS) for the trade. The RSOS describes the skills and knowledge required to perform the duties of the trade. Each standard is divided into Major Work Activities (MWA), which are divided into Tasks, which are divided into Sub-tasks .

The Red Seal examination has a certain number of questions assigned to these sections. The number of questions are provided below. For more information, see the full Red Seal Occupational Standard for this [trade](#).

**Total number of questions on the Interprovincial Red Seal examination – 125 questions\***

| Subject                                                                              | Percent | Number of Questions |
|--------------------------------------------------------------------------------------|---------|---------------------|
| <b>MWA A: Performs Common Occupational Skills</b>                                    | 9%      |                     |
| <b>Task A-1:</b> Performs safety-related functions                                   |         | 3                   |
| <b>Task A-2:</b> Uses tools and equipment                                            |         | 4                   |
| <b>Task A-3:</b> Organizes work                                                      |         | 3                   |
| <b>Task A-4:</b> Uses communication and mentoring techniques                         |         | 2                   |
| <b>MWA B: Installs and Services Process Measuring and Indicating Devices</b>         | 24%     |                     |
| <b>Task B-5:</b> Installs and services pressure, temperature, level and flow devices |         | 9                   |
| <b>Task B-6:</b> Installs and services signal transducers                            |         | 4                   |
| <b>Task B-7:</b> Installs and services motion, speed, position and vibration devices |         | 4                   |
| <b>Task B-8:</b> Installs and services mass, density and consistency devices         |         | 4                   |
| <b>Task B-9:</b> Installs and services process analyzers                             |         | 5                   |
| <b>Task B-10:</b> Installs and services multiple variable computing devices          |         | 4                   |
| <b>MWA C: Installs and Services Safety and Security Systems and Devices</b>          | 9%      |                     |
| <b>Task C-11:</b> Installs and services safety systems and devices                   |         | 6                   |

|                                                                                          |      |     |
|------------------------------------------------------------------------------------------|------|-----|
| <b>Task C-12:</b> Installs and services facility security systems                        |      | 0   |
| <b>Task C-13:</b> Installs and services safety instrumented systems                      |      | 5   |
| <b>MWA D: Installs and Services Hydraulic, Pneumatic and Electrical Systems</b>          | 11%  |     |
| <b>Task D-14:</b> Installs and services control devices for hydraulic systems            |      | 3   |
| <b>Task D-15:</b> Installs and services pneumatic equipment                              |      | 5   |
| <b>Task D-16:</b> Installs and services electrical and electronic equipment              |      | 6   |
| <b>MWA E: Installs, Configures and Services Final Control Elements</b>                   | 20%  |     |
| <b>Task E-17:</b> Installs and services valves                                           |      | 6   |
| <b>Task E-18:</b> Installs and services actuators                                        |      | 7   |
| <b>Task E-19:</b> Installs and services positioners                                      |      | 8   |
| <b>Task E-20:</b> Configures and services variable speed drives                          |      | 4   |
| <b>MWA F: Installs and Services Communication Systems and Devices</b>                    | 10%  |     |
| <b>Task F-21:</b> Installs and services control network systems                          |      | 5   |
| <b>Task F-22:</b> Installs and services signal converters                                |      | 4   |
| <b>Task F-23:</b> Installs and services gateways, bridges and media converters           |      | 3   |
| <b>MWA G: Installs and Services Controls Systems and Process Control</b>                 | 17%  |     |
| <b>Task G-24:</b> Establishes and optimizes process control strategies                   |      | 5   |
| <b>Task G-25:</b> Installs and services stand-alone controllers                          |      | 2   |
| <b>Task G-26:</b> Installs and services programmable logic controllers                   |      | 5   |
| <b>Task G-27:</b> Installs and services distributed control systems                      |      | 4   |
| <b>Task G-28:</b> Installs and services human machine interfaces                         |      | 3   |
| <b>Task G-29:</b> Installs and services supervisory control and data acquisition systems |      | 2   |
| <b>Total</b>                                                                             | 100% | 125 |

*\*The number of questions on an interprovincial examination, assigned to assess each major work activity of the RSOS, as derived from the collective input from workers within the trade across Canada.*

## **Suggested trade resources when preparing for the examination.**

To assist you, a list of reference textbooks is provided below. Note that ISBN numbers are subject to change. Please consult with your supplier to access their most current version of the text you are acquiring. It is not necessary to use these specific textbooks; you may find others which will be equally beneficial. You are encouraged to seek additional reference materials in all test areas.

- Instrument Engineer's Handbook 4<sup>th</sup> Edition Volume One: Process Measurement and Analysis by Liptak pub CRC Press ISBN 9780849310836
- Instrument Engineer's Handbook 4<sup>th</sup> Edition Volume Two: Process Control and Optimization by Liptak pub CRC Press ISBN 9780849310812
- Instrument Engineer's Handbook 4<sup>th</sup> Edition Volume Three: Process Software and Digital Networks by Liptak pub CRC Press ISBN 9781439817766
- Fundamentals of Industrial Control: Practical Guides for Measurement and Control 2<sup>nd</sup> Edition by D.A. Coggan pub ISA ISBN 9781556178634
- Electronics Fundamentals, Circuits, Devices and Applications 8<sup>th</sup> Edition by T.L. Floyd pub Prentice Hall ISBN 9780135072950

Individual Learning Modules (ILMs) for the Instrumentation and Control Technician trade may be ordered through the Saskatchewan Polytechnic Bookstore Call Centre: 1-866-569-8398. They are also available through <https://ilm.nait.ca/home>

(\*Any fundamental electronics textbook that covers basic circuits, transistors and operational amplifiers would be suitable.)

## **Those studying for their Interprovincial examination may wish to refer to other Level booklists for additional study materials.**

Unless otherwise noted, books listed here are available through the Saskatchewan Polytechnic Bookstore Call Centre: 1-866-569-8398.

NOTE: Textbooks **are not** usually available from libraries. When textbooks are being purchased, candidates should allow several weeks for delivery and several weeks for studying.

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This information is subject to change without notice.