Automotive Electric Vehicle Technician Safety

Certification Guide



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Table of Contents

Introduction **3**
Purpose of this Guidebook 3
About CSA Group 3
Certification Contact Information 3
About this Certification 3
Qualifications of a CSA Certified Automotive Electric Vehicle Technician 4
Certification Prerequisites 4
Certification Process **5**
Application Process 5
Program Fees 5
Payment and Refund Policy 5
Audit Process 6
Examination Administration and Scheduling 6
Examination Eligibility 7
Re-examination 7
Examination Language 7
Examination Special Accommodation 7
Certificate Issuance 7
Replacement of Certificates 7
Certification Period 8
Use and Requirements for Use of Certificates and Logos 8
Certification Terms and Conditions 8
Professional Code of Ethics and Professional Conduct 9
Non-Discrimination 9
Impartiality 9
Confidentiality 10
Privacy Policy 10
Recertification 10
Refusal to Issue or Renew an Automotive Electric Vehicle Technician Safety Certification 11
Revocation or Suspension of an Automotive Electric Vehicle Technician Safety Certification 11
Voluntary Withdrawal of Certification 11
Complaints and Disputes 12
Appeals 13
Appeals Board 13
Examination Preparation and Completion **14**
General Description 14
Exam Content 14
Pass-fail Standard 14
Exam Delivery 14
Examination – General Guidelines 15
Exam Security 16
Exam Results Notification 17
Examination Body of Knowledge and Blueprint **17**
Examination Knowledge Reference Documents 17
Exam Objectives **18**

Introduction

Purpose of this Guidebook

This Guidebook provides information on the requirements to achieve an Automotive Electric Vehicle Technician Safety Personnel Certification.

This personnel certification guide is provided for informational purposes only. The most current version of this manual, as published on the CSA Group website, shall prevail in any case a discrepancy occurs between this version and the official released version of this guide.

About CSA Group

CSA Group is an independent, not-for-profit member-based association dedicated to advancing safety, sustainability and social good. We are an accredited standards development organization.

As technologies continue to grow and evolve, and as the labour force grows more mobile, so has the need for a method to consistently assess, certify and measure individual worker knowledge. In response to this growing need, CSA Group develops and manages personnel certification programs guided by ISO/IEC 17024:2012 *General requirements for bodies operating certification systems of persons.* Current operating programs include CNG (Compressed Natural Gas) Cylinder and Fuel System Inspector, P.I.P.E.S. Riggers, Medical Gas Piping and Systems Installation, Construction Electrician (NOC 7241) Solar Photovoltaic (PV) Systems Installation, Certified Medical Device Reprocessing Technicians, and Certified Automotive Electric Vehicle Technician Safety.

Certification Contact Information

CSA Group

Email: Training@csagroup.org

Website: www.csagroup.org

About this Certification

The Automotive Electric Vehicle Technician Safety Personnel Certification program has been developed by CSA Group in conjunction with interested parties in the industry to provide assurance that an individual possesses the competencies deemed necessary to perform the job function of an Automotive Electric Vehicle Technician. The certification is designed to complement accreditation programs for verification bodies.

The development of this certification is guided by the ISO/IEC 17024 standard. ISO/IEC 17024 is the global benchmark for organizations operating personnel certification programs and outlines the methods and procedures required to ensure the objective and unbiased assessment of a candidate's knowledge, skills, and abilities.

Passing the Automotive Electric Vehicle Technician Safety examination will indicate that the candidate possesses the knowledge, skills, and decision-making abilities necessary to safely diagnose, inspect, maintain, and repair high-voltage original equipment manufacturer (OEM) or converted electric vehicles.

CSA Certified Automotive Electric Vehicle Safety Technicians will be periodically re-assessed to ensure they remain up to date on technical developments and industry changes.

The CSA Group website will contain a registry of CSA Certified Automotive Electric Vehicle Safety Technicians.

Qualifications of a CSA Certified Automotive Electric Vehicle Technician

The Automotive Electric Vehicle Technician Safety Certification tests each candidate's knowledge to ensure the candidate possesses the knowledge and skills of the CSA Certified Automotive Electric Vehicle Safety Technician known as the minimally qualified candidate (MQC). CSA's expert committee defines the minimally qualified candidate as follows:

The MQC can perform Automotive Electric Vehicle Technician activities without assistance, including (but not limited to):

- Determine an appropriate method to secure a safe environment for the high-voltage vehicle when servicing, diagnosing, or repairing high-voltage DC and AC systems.
- Recall the requirement for a minimum of 2 people when servicing an electric vehicle.
- Identify electric high-voltage vehicle systems and subsystems.
- Articulate protocol to identify and ensure safety steps are followed when servicing or isolating a vehicle that current poses a high-risk safety concern.
- Identify, maintain, and properly care for equipment and PPE according to the manufacturer's service procedures and safety standards.
- Evaluate manufacturer-specific instructions for general service, repair, and diagnosis.
- Determine the appropriate method to power down and secure a high-voltage vehicle - perform a live-dead-live test on a high-voltage battery and capacitors to ensure component safety.
- Understand and apply basic knowledge of tools used to diagnose and repair electric vehicles following the manufacturer's product specifications.
- Understand and apply basic knowledge of electricity, and high voltage and low-voltage systems.
- Understand the differences between level 1, level 2, and DC chargers.
- Articulate manufacturer's protocol in the event of a high-voltage vehicle system failure or vehicle damage.

Certification Prerequisites

To apply to take the Automotive Electric Vehicle Technician Safety exam for certification, candidates must satisfy the following prerequisites for either option below:

- Option in Canada: AST Red Seal or equivalent,
    - Equivalent in Quebec:
        - CPA Certification Journeyman Mechanic Class 3 or
        - AEP/STC Certification in Electric Vehicles or "Competence VE Certificate"
- Option in US: ASE-Certified Master Automobile Technicians (A1-A8 – Automobile and light truck certification tests) and L3 Hybrid Electric

Please note: all information, including references provided to CSA Group as part of the application process will remain confidential.

Certification Process

Application Process

To apply for the Automotive Electric Vehicle Technician Safety Certification an applicant must:

1. Purchase application and exam through the CSA Group website at https://www.csagroup.org/store/
2. Meet all the prerequisites of the certification
3. Respond to purchase confirmation by completing the online application,
4. Provide copies of all applicable documentation
5. Agree and adhere to the code of ethics and professional conduct and the certification terms and conditions, and
6. Schedule and pass the written exam.

All fees are due prior to submitting the application

An email address is mandatory and must be included as this will be the primary mode of communication regarding the steps in the certification process. Each candidate applying for certification must have their own unique, individual email address. One email address may not be used for multiple candidates.

CSA Group will process applications when received. If an application is incomplete, CSA Group will notify the applicant via email of the deficiencies found in the application. Those deficiencies must be corrected before the candidate will be approved to take the certification exam.

All applicants will receive a confirmation email within two (2) weeks of application regarding their registration and certification eligibility requirements.

Each new application has a life span of six (6) months from the time it is accepted. The applicant must fulfill all requirements of the certification process within that time period. If an applicant is unable to complete the certification process within that period of time, the application will expire and the applicant must restart the certification process including payment of any application or examination fees.

Program Fees

Program fees for the Automotive Electric Vehicle Technician Safety Certification including application, examination, and re-examination fees, may be found on the CSA Group Store. Please visit https://www.csagroup.org/store/ for more information.

Payment and Refund Policy

Payment of the fees must be submitted online at https://www.csagroup.org/store/ CSA Group accepts Visa, MasterCard and American Express as payment in US or Canadian dollars.

When the payment has been received, candidates will receive an email from training@csagroup.org with a link in order to complete the online application. Once the application is submitted, CSA will process the application, and notification will be sent to the candidate by email regarding the next step. This email may

- Request additional information if necessary, or
- Notify the candidate the application has been selected for audit (if selected), or

- Notice of approval to exam, and information for scheduling.

Application fees are non-refundable.

Exam fees may be refunded if a written request is submitted at least one month prior to a scheduled exam date and at least one month prior to the examination eligibility expiration date. CSA Group will retain a processing fee of $110 CA.

Audit Process

The submission of an application indicates the applicant's agreement to comply with the terms of CSA Group's audit process. All applications are subject to an audit and a percentage of applications are randomly selected for audit. Please note that while the selection process for an audit is primarily random, CSA Group reserves the right to select any applicant to be audited at any time, including after the credential has been awarded. If the applicant fails to meet the audit requirements after attaining the credential, the applicant is not entitled to a refund.

The applicant will be notified when the application and fee is received if the submitted application is selected for audit. An audit notification will be sent to the applicant electronically and will provide detailed information on how to comply with the terms of the audit. During an audit, the applicant may be asked to submit supporting documentation required by the certification, such request may include, but is not limited to, the following:

- Copies of diploma or a global equivalent;
- Signatures from supervisor(s) or manager(s) for the skills, experience and/or responsibilities if required and documented in the experience section of the application and on the performance checklist;
- Copies of certificates and/or letters from the training institution(s) for any mandatory course;
- Copies of certificates and/or letters to demonstrate the required amount of professional development; and
- other items required by the certification.

Once documentation is provided, the audit should take approximately two weeks to complete. The applicant may not continue with the certification process until the applicant has complied with the audit requirements.

Once the applicant has successfully completed the audit, the applicant will be permitted to continue the certification process and will be notified of his/her examination eligibility. If the applicant fails to meet the audit requirements, a refund may be given, dependent upon the stage of the certification process at the time of the audit. (Refer to the Payment and Refund Policy section of this guidebook for more details).

Examination Administration and Scheduling

The Automotive Electric Vehicle Technician Safety Certification is administered through CSA Group's computer-based testing network. Once a candidate has submitted all the required information and has been approved to take the certification exam, CSA Group will send the candidate approval for the exam and scheduling information by email. Once the candidate receives their email notifications, they will be able to register for the exam:

Testing may be scheduled for examination:

- At a proctored testing location (locations are typically a short drive for most candidates), or
- Via online proctoring, using the candidates own computer at home, work, or any location that meets the online requirements*.

Applicants should save all examination scheduling verification for their records.

CSA Group uses computer-based testing (CBT) to deliver its certification examinations. However, in certain situations, paper-based tests may be offered for accommodation reasons.

*Please contact CSA Group for a guide on computer and location requirements for online exam proctoring.

Examination Eligibility

The examination eligibility period is six (6) months from the time an application is approved by CSA Group. Applicants may take the examination up to three times within the six-month period if they did not pass on the first attempt. (As noted below, re-examination fees apply to the second and third attempts to pass the examination.)

Re-examination

During the examination eligibility period, an applicant may take the written examination up to three times.

Re-examination fees apply to the second and third attempts to pass the examination, and re-examination fees must be paid in full in order to schedule an exam. If the eligibility period expires without achieving a passing score, the applicant must reapply for the certification.

Examination Language

The CSA Group certification examination for Automotive Electric Vehicle Technician Safety Certification exam is administered in English and French.

Examination Special Accommodation

CSA Group adheres to the principles of accessibility and will accommodate any special needs upon request.

Certificate Issuance

Upon confirmation of application requirements and passing the Automotive Electric Vehicle Technician Safety certification exam, CSA will issue a certificate indicating the valid Certification Period.

The certificate is owned by CSA Group and may not be reproduced or modified in any way. Verification of certification should be done using the qualified personnel listing at https://www.csagroup.org/search-qualified-personnel/.

Replacement of Certificates

CSA Group may issue a replacement if the certificate of the CSA Certified Automotive Electric Vehicle Safety Technician has been lost or destroyed, or if the CSA Certified Automotive Electric Vehicle Safety Technician’s name has changed, and the original certificate is returned to CSA Group.

Certification Period

CSA Group Automotive Electric Vehicle Technician Safety Certification is valid for a period of 5 years from the date of issue.

Use and Requirements for Use of Certificates and Logos

Once an individual receives their certification letter and certificate, they may represent themselves as a CSA Certified Automotive Electric Vehicle Safety Technician under CSA Group's Automotive Electric Vehicle Technician Safety Certification Program.

Certification under this program does not authorize the certified individual any rights to the use of CSA Group's name or logo. All requests for use of the name or logo must be made in writing and expressly authorized by CSA Group. As part of the program monitoring, CSA Group routinely reviews advertisements, catalogues, websites and promotional material to confirm compliance. Unauthorized use of the CSA Group name or logo constitutes cause to initiate procedures for withdrawal of certification and in severe cases may constitute grounds for legal action.

Certification Terms and Conditions

By signing and submitting the electronic application candidates are agreeing to the following terms and conditions:

1. I agree to comply with the provisions of this certification as described in PCP-10 Automotive Electric Vehicle Technician Safety Certification Guide, to only make claims regarding my certification with respect to the scope for which the certification has been granted, and not to use the certificate in a misleading manner.
2. I agree to notify CSA Group in a timely manner of changes concerning the information I have provided, including my current address, telephone number, and email.
3. I have reported, and will continue to report, to CSA Group, within sixty (60) days of occurrence, any matters, proceedings, lawsuits, settlements and/or other agreements, administrative agency actions, or organizational actions relating to my profession or occupation, including all complaints relating to my professional activities, and matters or proceedings involving, but not limited to certification, credentialing, malpractice, disciplinary ethics or similar matters. I also agree to promptly report, within sixty (60) days of occurrence, any felony criminal charges, convictions, or plea agreements or other criminal charges, convictions, or plea agreements relating to acts of dishonesty or unethical conduct.
4. I agree that CSA Group has the right to communicate with any person, government agency or organization to review or confirm the information in this application or any other information related to my application for CSA Group certification. Further, I agree to and authorize the release of any information requested by CSA Group for such review and confirmation.
5. I understand that the CSA Group credential status does not imply licensure, registration or government authorization to practice any specific job function or to engage in related activities
6. I agree that all materials submitted to CSA Group become the property of CSA Group, and that CSA Group is not required to return any of these materials to me.
7. I agree that upon achieving the CSA Group credential, my name may be posted on the CSA Group website as part of an Online Registry to be created and maintained by CSA Group.

8. I agree that all disputes relating in any way to my application for a CSA Group certification and/or my involvement generally in a CSA Group certification program will be resolved solely and exclusively by means of CSA Group policies, procedures and rules, including the stated appeals process.
9. CSA Group reserves the right to suspend or revoke my credential if it is determined I have failed to uphold, or otherwise breached this agreement, or committed a violation of the CSA Group Code of Ethics and Professional conduct.
10. I agree to refrain from use or promotion of this certification should my certification be suspended, until notified of the suspension being resolved.
11. I agree to refrain from all use and promotion of this certification should this certification be withdrawn.
12. I release and indemnify CSA Group from all liability and claims that may arise out of, or be related to, my certification and related activities. This certification agreement may be revised periodically. I understand that it is my responsibility to obtain the most current copy of this certification agreement in the certification guide online at https://www.csagroup.org/store/

Professional Code of Ethics and Professional Conduct

This code of ethics sets forth the expectation that credential holders will commit to conducting themselves in a professional, honest, and impartial manner.

This code of ethics applies to all CSA Group Personnel Certification credential holders regardless of the certification designation, and includes the following professional conduct:

- Provide equitable, honest and impartial treatment of customers;
- Provide customers with accurate, objective, timely and understandable information
- Perform all services in a safe and professional manner;
- Stay informed of and comply with all relevant laws, codes, regulations, standards and industry practices;
- Protect proprietary and confidential information gained during the course of work; and
- Promote positive activities which raise the level of professionalism of the industry.

By signing and submitting the electronic application candidates agree to conduct themselves in a professional and thorough manner as a CSA Group Personnel Certification holder. Furthermore, they agree to the Certification Agreement terms and conditions, including adherence to the Code of Ethics and Professional Conduct.

Non-Discrimination

Participation in CSA Group's occupational certification programs are open on a non-discriminatory basis to all individuals and does not require membership in any association.

Impartiality

CSA Group and our employees, contractors and volunteers understand the importance of impartiality and the consideration of any potential conflict of interests in carrying out certification activities. CSA Group is committed to identifying and mitigating risks in every area of the certification process which may pose a threat to impartiality. Certification of individuals is based on objective evidence obtained by CSA Group through a fair, valid and reliable assessment process which is not influenced by other interests or parties.

Confidentiality

CSA Group is committed to protecting confidential and/or proprietary information related to applicants, candidates, certificates and examination development, maintenance, and administration process.

All information submitted and/or retained by CSA Group regarding each individual's program application, private information and communications, examination results and certification information are confidential and may not be disclosed, divulged or made accessible. Examination results will only be released to the candidate.

Information related to the design, development, administration and maintenance of the certification examination is confidential with confidential materials including, but not limited to, all examination development documentation, standard setting documentation, exam performance documents, individual examination items and exam forms, as well as examination scores and score reporting.

CSA Group maintains confidential information received from the individual and will not disclose such information to any third party without prior written approval by the individual, or as required by law. CSA Group will provide written notification to the individual at least five (5) business days prior to releasing such information.

Privacy Policy

CSA Group and its subsidiaries and affiliates (collectively CSA Group) are committed to respecting your privacy. Our Privacy Policy describes how we collect, use, disclose, store and otherwise process information through our website and its affiliated websites and other online products and services. In addition, this Policy states how you can control the collection, correction and/or deletion of information. We will not use or share your information with anyone except as described in this Privacy Policy.

We urge you to read our Privacy Policy so that you understand our commitment to you and your privacy, and how you can participate in that commitment by visiting https://www.csagroup.org/legal/privacy-policy/.

By providing your personal information to CSA Group in the ways described in this Privacy Policy, you agree that you are authorized to provide that information and are accepting this Privacy Policy and any supplementary privacy statement that may be relevant to you. You have the right at any point to revoke consent and CSA Group will stop using and processing your personal data. If you do not agree to our practices, please do not register, subscribe, create an account, or otherwise interact with our services, CSA Group's websites, or mobile-device applications.

Recertification

Automotive Electric Vehicle Technician Safety Certifications expire every five (5) years. Generally, CSA Group will issue a recertification notice and application form ninety (90) days prior to the date when the certificate expires but is the responsibility of the applicant to ensure timely recertification. CSA Certified Automotive Electric Vehicle Safety Technicians who apply for recertification, meet the requirements, and pay the required fee will receive a new certificate containing the new expiry date.

CSA Certified Automotive Electric Vehicle Safety Technicians may apply for recertification up to six (6) months prior to their certification expiration date and no later than three (3) months after expiration. CSA Certified Automotive Electric Vehicle Safety Technicians applying for recertification more than three (3) months after the expiration of their certification must fulfill all requirements of the initial certification process.

Refusal to Issue or Renew an Automotive Electric Vehicle Technician Safety Certification

CSA Group may refuse to issue or renew an Automotive Electric Vehicle Technician Safety Certification:

- For any of the circumstances under which CSA Group can revoke or suspend a certification; or
- The certification to be renewed was revoked or suspended by CSA Group.

Revocation or Suspension of an Automotive Electric Vehicle Technician Safety Certification

CSA Group reserves the right to withdraw the certification of any person found violating the Certification Terms and Conditions, Code of Ethics and Professional Conduct or the policies and procedures of the certification.

CSA Group may revoke or suspend an Automotive Electric Vehicle Technician Safety Certification for any of the following reasons including by not limited to:

- Violation of the Certification Terms and Conditions or Professional Code of Ethics;
- The application submitted was fraudulent or inaccurate;
- The person was discharged from his/her employment for incompetence, unless the person has not yet exhausted the rights of appeal available in his/her organization;
- The person who has previously had an Automotive Electric Vehicle Technician Safety Certification revoked; or
- the person has failed:
    - To exercise the level of care, diligence, and skill that a reasonably prudent technician would be expected to exercise in a similar situation;
    - To act honestly, competently and with integrity; or
    - To meet or has contravened any condition that is set out in his or her certificate.

Upon a notice of termination of an Automotive Electric Vehicle Technician Safety Certification, the individual will cease all use of or reference to the CSA Group certification and the CSA Certified Automotive Electric Vehicle Safety Technician designation. Individuals have the right to appeal as outlined in the appeals process below. The individual will be removed from the Qualified Personnel Listing on the CSA Group website.

Voluntary Withdrawal of Certification

Individuals wishing withdrawal of the Automotive Electric Vehicle Technician Safety Certification must submit a request in writing to CSA Group. Once approved, the individual will be removed from the National Registry and must immediately cease any use of or reference to the CSA Group certification. Individuals wishing to reinstate their certification must apply for certification as outlined in the certification process.

Complaints and Disputes

CSA Group is committed to the value certification programs offers to industry, and the credibility that certification offers to individuals in their chosen field. It is the policy of CSA Group that all certification programs are of quality and that all applicants, certified persons, employers, and interested parties, have a fair and impartial forum to bring forward complaints concerning the certification process, or to the conduct of individuals who are certified under this program.

CSA Group's policy is to provide a fair and impartial forum for complaints associated with the CSA Group Certification programs and the individuals certified under the programs. Anyone wishing to appeal a decision affecting their certified status or having a complaint as to the performance of a certified person or candidate may file a complaint within thirty (30) calendar days of the occurrence which the complaint is about.

Information regarding the complaint process is available to the public on the CSA Group website and/or other published documents.

Actions taken under this policy do not constitute enforcement of the law, although referral to appropriate federal, state, or local government agencies may be made about the conduct of the certified person as warranted by the individual situation. Individuals bringing complaints are not entitled to any relief for damages by virtue of this process.

Complaints are to be submitted in writing and signed to the Director, Standards Education at CSA Group and include the full name, postal mailing address, and telephone number of the appellant/complainant and specifying the conditions and circumstances of the appeal/complaint, along with documentation supporting the complaint. All complaints will be reviewed by CSA Group within thirty (30) days of receipt to determine merit. Written notice will be provided to the candidate/certified person if CSA Group determines the complaint is valid, so they have opportunity to respond to the complaint.

Complaints under review by CSA Group will be completed in an appropriate amount of time, not to exceed six (6) months, unless there are extenuating circumstances that require an extended period of time. The Director, Standards Education exercises general supervision over all inquiries. The Director, Standards Education and personnel certification staff may be assisted in the conduct of its review by other CSA Group staff or legal counsel. Both the individual submitting the complaint and the candidate/certificant who is the subject of the investigation (or his or her employer) may be contacted for additional information with respect to the complaint. CSA Group may at its discretion contact such other individuals who may have knowledge of the facts and circumstances surrounding the complaint.

All review inquiries and investigations are conducted in confidence and objectively, without any indication of prejudgment. An investigation may be directed toward any aspect of a complaint which is relevant or potentially relevant. Formal hearings are not held, and the parties are not expected to be represented by counsel, although CSA Group may consult its own counsel.

Outcome of the complaint review may be a determination by CSA Group:

- For dismissal of the complaint;
- That a violation has occurred and provide the candidate/certificant with an opportunity to correct the violation and provide written assurance that issues will not continue or recur;
- That a violation has occurred with suspension of the certification for a designated period of time, or suspension of a candidate's eligibility for a designated period of time;
- That a violation has occurred and termination or revocation of a certification; or
- that a violation has occurred and termination of a candidate's eligibility for a designated period.

For outcomes that include suspension or termination publication of the information will only occur after any appeal and decision has been completed, or an appeal period has passed.

Certificants who have their certification terminated are not to be considered for certification in the future. If certification is revoked, any and all certificates or other materials requested by the CSA Group must be returned promptly to the Director, Standards Education.

If the individual disputes the decision made by CSA Group after the appeal meeting, the individual has the right to appeal to an independent and impartial Appeals Board as outlined below.

Appeals

CSA Group's certification programs are administered and supervised by Canadian Standards Association. Challenges to the certification program are governed by CSA Groups' Complaints and Disputes and Appeals Procedures outlined in this certification guide.

Any individual has the right to appeal all decisions relating to CSA Group's personnel certification program including, but not limited to: testing, suspension, denial or termination of certification within thirty (30) days of the date of the result or notice. A written notice of intent to appeal must be sent to CSA Group within thirty (30) business days of the individual's receipt of the decision, which forms the basis for appeal.

Upon receipt of a written request by the individual to appeal, CSA Group shall convene an Appeals Board and notify the individual and responding parties. CSA Group will arrange an appeal meeting with the individual at CSA Group's headquarters or other mutually agreed to location, within forty-five (45) business days of the receipt of the written request, with the appeal decision complete and final decision notice given to the appellant within ninety (90) days of the receipt of the written request.

The individual and the Appeals Board will attend and participate in the meeting. The appeal will not include a hearing or any similar trial-type proceeding. Legal counsel is not expected to participate in the appeal process, unless requested by the appellant at least five (5) business days prior to the meeting and approved by the Appeal Board. CSA Group and the Appeal Committee may consult legal counsel. When the individual has had a full opportunity to submit their case, the Appeals Board may declare the hearing closed and provide the individual and CSA Group with a decision, including a brief description of its reasons, within ten (10) business days. Decisions of the Appeals Board are by majority vote.

The decision of the Appeals Board either affirms or overrules the determination of the CSA Group Reviewer(s). The Appeal Committee decision is binding upon CSA Group, the candidate/certificant who is subject to the decision, and all other persons involved in the complaint. The Appeals Board will provide notice to the appellant at the end of the appeals-handling process.

Appeals Board

The Appeals Board will consist of at least three (3), but not more than five (5) members. No current member of the Review committee, or individual or agent or any person with any interest in the individual, directly or indirectly, is eligible to serve on the Appeals Board.

The Appeals Board hearing will be informal and private. The Appeals Board may only review whether the determination by the CSA Group Reviewer(s) was inappropriate due to material errors of fact, or failure of the Reviewer(s) to conform to published criteria, policies or procedures. Only evidence of fact and conditions up to and including the time of the Reviewer's determination are considered during an appeal. The appellant will be given a full opportunity to present any material or proof relevant to the issue. Formal rules of evidence are not applicable. The Appeals Board determines the relevance and materiality of any evidence presented.

All costs related to the Appeals Board are the responsibility of the individual and are due within thirty (30) business days of the billing, unless the Appeals Board sides with the individual's position, in which case CSA Group will be responsible for the costs.

Examination Preparation and Completion

General Description

The Automotive Electric Vehicle Technician Safety Certification exam consists of approximately 82 multiple-choice questions. Examination questions have only one correct answer. Each exam question is independent and does not rely on the correct answer to any other questions.

CSA Group may include an additional 10 questions in the exam for statistical evaluation of future examination questions. These additional questions are not included as part of the examination score. These questions will not be identified in the exam, so it is important that the candidate answers every question completely. The candidate's grade is based only on the number of scored items answered correctly, not the additional questions.

The candidate will have three hours (180 minutes) to complete the exam. Exams are closed book. No reference materials may be used during the course of the exam. Test centres may have additional requirements.

Exam Content

The exam is based on categories of tasks and knowledge required by a CSA Certified Automotive Electric Vehicle Safety Technician. The list below outlines the examination content by category for the Automotive Electric Vehicle Technician Safety Certification.

Categories

- Safety and related tasks and common occupational skills
- Perform high-voltage disconnect
- Maintain battery systems and components
- Diagnose and service high-voltage electronic control systems
- Diagnose, maintain, and repair heating and cooling systems related to high-voltage systems
- Diagnose, maintain, and repair high-voltage drive units

Pass-fail Standard

CSA Group Automotive Electric Vehicle Technician Safety Certification examination passing standard is established utilizing standard psychometric guidelines and is determined using a criterion-reference technique that evaluates a candidate based on a predetermined standard of knowledge or skill. This predetermined standard is defined as the minimum score that would be expected from candidates who have the level of knowledge and skills needed to competently conduct their work responsibilities.

Exam Delivery

The Automotive Electric Vehicle Technician Safety Certification exam will be delivered electronically at our computer-based testing centre locations on demand, or through remote online proctoring using your own computer.

Examination – General Guidelines

During the exam, the proctor will be responsible for supervising the exam in such a way as to ensure that exam security is maintained. As such, all candidates are expected to adhere to the following guidelines during the test sessions.

A candidate's participation in any irregularities occurring during the examination, such as giving or obtaining unauthorized information or aid, as evidenced by an observation or subsequent statistical analysis, may be sufficient cause to terminate participation, invalidate the results of the examination, or other appropriate remedy.

To be admitted to the examination the candidate must

- **The candidate will NOT be admitted without proper identification.** If there are any questions concerning the type of picture ID, the candidate should contact CSA Group. Bring **one (1)** current form of **non-expired photo** identification with **signature** from the following list that exactly match the first and last names on the certification application:
  - Driver's license
  - State or Provincial/Federal government ID card
  - Passport
  - Employee ID card
  - Military ID card
  - Student ID card
- Report on time.

During the Exam

- Smoking is NOT permitted in the examination site.
- Food and beverages are NOT allowed in the examination area.
- All personal items including books, notebooks, other papers, all electronic equipment (i.e. cell phones, cameras, etc.), book bags, coats, etc. will NOT be allowed in the exam room and must be left outside of the exam room **AT YOUR OWN RISK.**
- Friends and relatives, including children, will NOT be allowed in the examination building.
- Computer-based testing facilities offer exam services to multiple agencies. There may be other individuals in the exam room with the candidate who are sitting for exams from different organizations. The rules for their exam may be slightly different than the rules for the CSA candidate's exam in terms of exam time, and what is and is not allowed at their station.
- Computer-based tests are delivered via secure Internet connections. Internet connections are subject to the local Internet providers in the area. While it is not the norm, Internet connections can, on occasion, be lost momentarily, requiring the proctor to log the candidate back into his/her examination. If this occurs, the candidate should inform the proctor that the connection has been lost and the proctor will assist the candidate in logging back into the exam. The exam time remaining will be exactly the same as it was when the Internet connection was lost.

Prohibited items

Candidates are expressly prohibited from bringing the following items into the exam room:

- Cameras, cell phones, optical readers, or other electronic devices that include the ability to photograph, photocopy or otherwise copy test materials
- Notes, books, dictionaries, or language dictionaries
- Book bags or luggage
- Smart watches or other wearable devices with internet access
- iPods, mp3 players, headphones, or pagers
- Calculators (except as expressly permitted by the test sponsor), computers, PDAs, or other electronic devices with one or more memories
- Personal writing utensils (i.e., pencils, pens, and highlighters)
- Food and beverage
- Hats, hoods, or other headgear

If the proctor determines that the candidate has brought any such items into the exam room, the test session will immediately stopped and voided.

Environment

Exam room temperature can be unpredictable; therefore, we suggest that the candidate bring appropriate clothing (e.g. sweater or sweatshirt without pockets) to help to adapt to a cooler or warmer climate in the examination room. The candidate should bring ear plugs if they are sensitive to noise.

Exam Security

All CSA Group certification examination content and wording of examination questions constitute confidential information protected by copyright law. Any unauthorized receipt, possession, or transmission of CSA Group examination questions, content, or materials, either before the examination, on-site, or in the future is strictly forbidden.

The use of CSA Group examination materials for the purpose of examination preparation or training is also forbidden.

CSA Group reserves the right to take whatever measures are necessary to protect the integrity of its examinations. Violation of the CSA Group examination agreement and/or non-disclosure agreement, or the giving or receiving of aid in any CSA Group examination as evidenced either by observation at the time of the examination or by statistical analysis, or engaging in other conduct that subverts or attempts to subvert the examination or the CSA Group certification process, is sufficient cause for CSA to:

- Bar an individual from the examination
- Terminate participation in the examination
- Withhold and/or invalidate the results of the examination
- Withhold a certification
- Revoke a certification or
- Take appropriate other action.

Exam Results Notification

Approximately two weeks after completion of the exam, the candidate will receive official notification of the exam score from CSA Group. Candidates passing the exam and fulfilling all program requirements will also receive a certificate with the effective date of certification. In order to protect the candidate's confidentiality, under no circumstances will test scores be given by telephone.

Examination Body of Knowledge and Blueprint

Examination Knowledge Reference Documents

The Automotive Electric Vehicle Technician Safety exam draws on concepts included in the following standards and materials. They are helpful reference materials to use in preparation for the exam:

Familiarity with Automotive Electric Vehicle Technician Safety standards including, but not limited to:

- Automotive Technology: Principles, Diagnosis, and Service 7th Edition. James D Halderman
- Electric Vehicles: A Systems Approach. Sean Bennett.
- Hybrid, Electric & Fuel-Cell Vehicles. 2nd Edition. Jack Arjavec
- ASTM F1505-16(2021) Standard Specification for Insulated and Insulating Hand Tools
- ASTM F2413-05 Standard Specification for Performance Requirements for Foot Protection
- CSA C22.1:21 Canadian Electrical Code, Part I
- NFPA 70E, 2024, Standard for Electrical Safety in the Workplace
- SAE Guidelines for Electric Vehicle Safety, Reaffirmed 2020-10

Exam Objectives

The following exam objectives were developed by a group of industry experts. The following table outlines the knowledge and skills required for each objective.

Section 1.0	**Safety and related tasks and common occupational skills.**	**23%**
	Recognize proper use and maintenance of PPE and personal safety equipment.	
	Identify workplace safety hazards in order to maintain a safe workplace.	
	Describe applicable safety standards when working with high-voltage systems.	
	Given a scenario, describe how to maintain and secure an area for electric vehicle servicing and maintenance.	
	Identify and maintain tools, software, and service equipment according to information from the manufacturer.	
	Distinguish between hybrid, plug-in hybrid, and battery electric vehicles.	
	Describe safety information used to service hybrid, plug-in hybrids, and battery electric vehicles.	
	Demonstrate knowledge of basic electrical and electronic principles	
Section 2.0	**Perform high voltage disconnect**	**15%**
	Describe the procedure to safely isolate the high-voltage battery based on manufacturers' information.	
	Identify components that store and carry high voltage.	
	Identify equipment for battery isolation service and repair.	
	Recognize when decommissioning/power down is complete using a proper meter.	
Section 3.0	**Maintain battery systems and components**	**12%**
	Identify proper lifting equipment and tools for battery removal.	
	Describe how to install a high-voltage battery and repower the system.	
	Verify correct high-voltage system operation.	
	Determine how to retrieve relevant data related to the battery.	
	Given a scenario, interpret DTC and other data using the proper equipment.	
	Describe a battery state of health (SOH) check.	
	Determine how to repair a battery system, according to the manufacturer's procedures.	
	Describe how to safely store, transport, and recycle batteries.	
	Describe how to inspect and maintain cables and connectors.	
	Describe how to replace high-voltage cables.	
Section 4.0	**Diagnose and service high-voltage electronic control systems.**	**20%**
	Describe how to inspect electronic systems related to high-voltage components.	
	Select and use diagnostic tools and equipment for DTC and data retrieval for electronic control systems.	
	Describe how to remove and replace inverters, chargers, and other related control systems.	
	Describe how to diagnose and service on-board charging systems.	

	Describe how to use and operate a charging station in preparation for L1, L2, DCFC.	
Section 5.0	**Diagnose, maintain and repair heating and cooling systems related to high-voltage systems.**	**15%**
	Identify refrigerant systems and components.	
	Identify problems with heating and cooling systems related to the high-voltage system using the proper diagnostic tools and equipment.	
	Describe how to remove and replace components of a refrigerant system.	
	Describe the different operations of a refrigerant system.	
	Describe the different operations of a thermal management system.	
	Describe how PTC systems operate.	
	Describe how to service, remove, and replace components of an electronic heating system.	
	Describe how to verify the repair of an electronic heating system.	
Section 6.0	**Diagnose, maintain, and repair high-voltage drive units.**	**15%**
	Recognize electric drives, their components, applications, and operation.	
	Select and use diagnostic tools and equipment to service electric motors.	
	Identify the proper manufacturers test procedures to repair electric motors.	
	Identify tools and equipment to diagnose and service drive transmissions.	
	Describe procedures to remove and replace drive unit assembly.	
	Describe manufacturers' procedures to service a drive unit.	
	Describe how to verify the repair of a drive unit.	
	Total	**100%**



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100%

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