

ChargePoint Training & Certification

AC and DC Certification Exam Topics

AC Exam

1. Introduction to AC Charging
2. Electrical Fundamentals of AC Charging
3. AC Charging Station Components
4. AC EV Charging Infrastructure
5. Charging and Protocol Standards
6. Site Assessment and Installation
7. Safety and Codes
8. Charging Management and Control
9. Troubleshooting and Maintenance
10. User Support and Education

DC Exam

1. Introduction to DC Charging
2. Electrical Fundamentals of DC Charging
3. DC Charging Station Components
4. DC EV Charging Infrastructure
5. Charging and Protocol Standards
6. Site Assessment and Installation
7. Safety and Codes
8. Charging Management and Control
9. Troubleshooting and Maintenance
10. User Support and Education

Sample Questions

1. The onboard charging equipment within an electric vehicle contains a rectifier. What is the purpose of the rectifier?
 - a. To convert DC power into AC power to charge the vehicle battery.
 - b. To limit charging capacity to 22 kW AC
 - c. To bypass the DC fast charging and supply electricity directly to the battery.
 - d. To convert AC power into DC power to charge the battery.

2. You are an electrician installing equipment at an EV charging station in North America. Which safety device must be installed in all emergency system switchgear, switchboards, and panelboards?
 - a. A surge protection device
 - b. A voltage regulator
 - c. A transformer
 - d. A bonding jumper

3. What is the purpose of load management systems (LMS) in EV charging stations?
 - a. To maintain service and stability by keeping electric loads under infrastructure capacity.
 - b. To increase the electricity demand during peak usage times.
 - c. To eliminate recurring costs associated with networked charger management.
 - d. To allow each charging station to use as much electricity as it needs.

4. When troubleshooting a cellular modem in a networked EV charging station, you notice the connection is unstable. Which value does the modem use to assess the state of the connection to a given cellular tower in a standard way?
 - a. Received Signal Strength Indicator (RSSI)
 - b. Reference Signal Received Quality (RSRQ)
 - c. Signal-to-Interference plus Noise Ratio (SINR)
 - d. Reference Signal Received Power (RSRP)

5. You are hired to design an AC EV charging station at an office building. What is a requirement for authentication management?
 - a. Authentication management must allow unauthorized personnel to use the station in emergency conditions.
 - b. The charging station must be able to manage offline mode if communication is lost with the remote application.
 - c. The charging management system must require a network subscription to provide authentication.
 - d. Authentication management must be provided by a third-party provider or program.

6. What is a benefit of using DC fast charging stations compared to AC charging stations for vehicle charging?
 - a. DCFC can rapidly replenish a vehicle's battery.
 - b. DCFC stations are less expensive to install compared to AC charging stations.
 - c. DCFC is compatible with every EV on the market.
 - d. DCFC can be used to rapidly charge plug-in hybrid vehicles with small battery packs.

7. In the DC fast charging process, what happens exclusively inside the charging station?
 - a. The charger communicates with the battery to establish a connection.
 - b. The charger converts the alternating current (AC) power from the grid into DC power.
 - c. The charger supplies a high-voltage DC current directly to the electric vehicle (EV) battery.
 - d. The charger assesses various parameters in the electric vehicle (EV) to ensure safe and efficient charging.

8. What are the minimum current and voltage-to-ground values that require electric vehicle supply equipment (EVSE) to have a disconnecting means installed in a readily accessible location?
 - a. 50 A or more than 120 voltage-to-ground
 - b. 60 A or more than 150 voltage-to-ground
 - c. 100 A or more than 250 voltage-to-ground
 - d. 80 A or more than 240 voltage-to-ground

9. If a direct current (DC) station outputs 60 kW charging power at 140 A, what is the approximate output voltage?
 - a. 277 VDC
 - b. 346 VDC
 - c. 428 VDC
 - d. 480 VDC

10. You are an electric vehicle supply equipment (EVSE) field service professional dispatched to troubleshoot a station that would not initiate charging. You perform diagnostic tests and determine input power and the power electronics are functioning as designed. What is the most likely cause of the fault?
 - a. There is environmental damage to the station or its components.
 - b. There is too much demand on the site electrical infrastructure.
 - c. There are communication errors between the charge station and the EV.
 - d. There is a malfunction in the station cooling system.

Study Materials and References

1. IEC 61851-1 Electric Vehicle Conductive Charging System-Part 1 General Requirements
2. IEC 61851-23 Electric Vehicle Conductive Charging System, Part 23 DC EVSE
3. ISO 15118-1 Road Vehicles: Vehicle to Grid Communication Interface
4. SAE J1772 Surface Vehicle Standard
5. CSA C22.1 Canadian Electric Code, Part I
6. CSA C22.2 Canadian Electric Code, Part II
7. CSA Z462
8. Canada Labour Code, Part II
9. COHSR Part 1
10. COHSR Part VIII
11. COHSR Part XII
12. COHSR Part XIX

ChargePoint articles, papers, and helpful links

1. <https://www.chargepoint.com/blog/>
2. <https://www.chargepoint.com/blog/drumroll-please-lets-bust-7-ev-home-charging-and-installation-myths>
3. <https://www.chargepoint.com/blog/how-weve-built-ev-interopability-day-1>
4. <https://www.chargepoint.com/blog/whats-plug-beginners-guide-ev-connector-types>
5. <https://www.chargepoint.com/blog/whats-difference-between-level-2-ac-charging-and-dc-fast-charging>
6. <https://www.chargepoint.com/blog/which-better-your-business-level-2-ac-or-dc-fast-charging>
7. <https://www.chargepoint.com/blog/understanding-ev-building-codes-designing-and-building-future-greenbuild>
8. <https://www.chargepoint.com/blog/how-national-electric-vehicle-infrastructure-nevi-formula-program-can-be-success-9-ev>
9. <https://www.chargepoint.com/resources/business/video/>
10. <https://www.chargepoint.com/products/guides>
11. <https://www.chargepoint.com/resources/business/interactive-tours/>
12. <https://www.chargepoint.com/resources/business/ebooks-reports/>