

## Battery System

**1. Hybrid electric vehicle manufacturers specify that high voltage (HV) protective gloves be worn that meet what specification?**

- a. SAE J1930
- b. UL 1140-A
- c. ANSI class "0"
- d. OSHA Standard 1000

**2. What rating should a DMM have to be safely used on a hybrid electric or electric vehicle?**

- a. CAT III
- b. SAE J1930
- c. 10 megohm
- d. UL 1100

**3. Using a scan tool, what PID indicates that a high-voltage battery pack is degraded?**

- a. Internal resistance
- b. State of charge (SOC)
- c. Battery block voltage
- d. All of the above

**4. At what state of charge does the ICE start to charge the HV battery on most hybrid electric vehicles (HEVs)?**

- a. 30%
- b. 40%
- c. 50%
- d. 60%

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**5. When diagnosing high-voltage (HV) battery pack concerns, what scan tool data is one of the first to check?**

- a. State of charge (SOC)
- b. Internal resistance
- c. External resistance
- d. Electrolyte level

**6. What tool or type of meter should be used to check for voltage leaks/loss of isolation?**

- a. A CAT III DMM
- b. An insulation tester
- c. An ohmmeter
- d. A high impedance voltmeter

**7. A HV battery pack has been removed from the vehicle. The connecting straps (connectors) for some of the modules are found to be corroded. Technician A says that the connectors should be replaced. Technician B says that the battery modules should all be checked for state of charge to see that they are all within specifications. Which technician is correct?**

- a. Technician A only
- b. Technician B only
- c. Both Technicians A and B
- d. Neither Technician A nor B

**8. High-voltage (HV) battery packs are cooled using \_\_\_\_\_**

- a. A separate cooling system with the coolant circulated by an electric-operated pump
- b. Cabin or outside airflow moved by an electric blower
- c. The ICE cooling system to circulate coolant around the HV battery module assembly
- d. Either a or b

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**9. If the HV battery pack becomes degraded, what symptom may the driver experience?**

- a. A warning light on the dash
- b. Reduced fuel economy
- c. The ICE runs all or most of the time
- d. Any or all of the above

**10. The internal resistance of a hybrid electric vehicle is being checked using a scan tool. What is normal internal resistance?**

- a. 15 to 40 milliohms
- b. 1.5 to 5.0 ohms
- c. 3 to 7 ohms
- d. 10 to 15 ohms

**11. A HV battery pack is being diagnosed using a scan tool. A diagnostic trouble code can be set if there is \_\_\_\_\_ or more difference in voltage between battery blocks.**

- a. 2.2
- b. 1.2
- c. 0.3
- d. 0.1

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### Answer Key

1. c

2. a

3. d

4. c

5. a

6. b

7. c

8. d

9. d

10. a

11. c