

**Automotive Electrical and Engine Performance 8th Edition**  
**Chapter 11 – Battery, Starting and Charging Diagnosis, and Stop-Start**  
**Quiz A**

1. What is the purpose of the cold-cranking amperes (CCA) rating in a battery?
  - a. To measure the total energy storage capacity of the battery
  - b. To estimate the life expectancy of the battery under load
  - c. To calculate the ampere-hour (Ah) capacity of the battery
  - d. To indicate how much current the battery can deliver at 0°F (-18°C) for 30 seconds
  
2. What is the key difference between a flooded lead-acid (FLA) battery and an absorbed glass mat (AGM) battery?
  - a. AGM batteries require regular maintenance, while FLA batteries do not
  - b. AGM batteries are sealed and leak-proof, while FLA batteries have liquid electrolytes
  - c. FLA batteries are used in hybrid vehicles, while AGM batteries are for conventional vehicles
  - d. AGM batteries release more gases during charging than FLA batteries
  
3. What should the parasitic load not exceed on most vehicles according to manufacturer guidelines?
  - a. 10 mA
  - b. 50 mA
  - c. 100 mA
  - d. 200 mA
  
4. What is the recommended charging rate for a discharged battery to prevent overheating?
  - a. 1% of the battery's CCA rating
  - b. 2% of the battery's ampere-hour rating
  - c. 5 amps regardless of battery size
  - d. A fast charge of 50 amps for 15 minutes

5. Which method is preferred for measuring battery electrical drain during a parasitic load test?
- a. Using a digital voltmeter to measure resistance in series
  - b. An inductive clamp-on ammeter around the battery cable
  - c. A load tester directly connected to the terminals
  - d. Disconnecting the alternator and measuring output voltage
6. Why do some modern vehicles require battery registration after a replacement?
- a. To pair the battery with the immobilizer system for security
  - b. To ensure compatibility with the vehicle's diagnostic tool
  - c. To reset the charging system algorithm for the new battery characteristics
  - d. To avoid overcharging by manually resetting the alternator
7. Which starter design is most suitable for vehicles with a stop-start system?
- a. Single-solenoid starter
  - b. Advanced engagement (AE) starter
  - c. Conventional starter with manual override
  - d. Permanently engaged (PE) starter
8. What does an AC ripple voltage of 0.5 volts or higher from an alternator indicate?
- a. A short circuit in the alternator housing
  - b. Excessive resistance in the battery terminals
  - c. Faulty diodes or stator windings in the alternator
  - d. Insufficient alternator ground connection
9. What is the maximum acceptable voltage-drop for a cranking circuit cable under load?
- a. 0.2 volts
  - b. 0.5 volts
  - c. 1.0 volts
  - d. 2.0 volts

10. What is the correct procedure for performing a charging system voltage test?
- a. Set the meter to AC volts, connect to the battery terminals, and test at idle
  - b. Set the meter to DC volts, connect to the battery terminals, and measure at 2,000 RPM
  - c. Use a clamp-on ammeter to measure current flow to the battery under load
  - d. Disconnect the battery and measure alternator output at 5,000 RPM

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**Correct Answers:**

1. d
2. b
3. b
4. a
5. b
6. c
7. d
8. c
9. a
10. b