Automotive Electrical and Engine Performance 9th 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