

TEST YOUR AUTOMOTIVE TECHNICAL KNOWLEDGE

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This self-test can help you determine how much you really know about this subject. Questions are written in the ASE style format and are multiple choice.

The answer key is on the last page.

There are also links to related articles on the <https://www.AA1Car.com> website. Good luck!

BATTERY, CHARGING & STARTING SELF-TEST

1. Technician A says a replacement battery should have the same or higher COLD Cranking Amps (CCA) rating as the original battery.

Technician B says the battery "group size" depends on the CCA rating of the battery and its post configuration.

Who is right?

- a. Technician A only
 - b. Technician B only
 - c. Both Technician A and B
 - d. Neither one
2. What is the function of the diodes (rectifier assembly) in an alternator?
- a. Converts Direct Current (DC) to Alternating Current (AC)
 - b. Converts Alternating Current (AC) to Direct Current (DC)
 - c. Regulates charging voltage
 - d. Regulates electrical system voltage
3. A gear reduction starter:
- a. Uses gears to reduce friction
 - b. Uses gears to reduce cranking speed
 - c. Uses gears to increase cranking speed
 - d. Uses gears to deliver more cranking torque with less amps
4. The magnets inside a permanent magnet starter do what?
- a. Hold the shaft bearings in place
 - b. Replace the armature
 - c. Replace the field coils
 - d. Replace the brushes
5. An "AGM" battery has what?
- a. No negative cell plates
 - b. No positive cell plates
 - c. No liquid electrolyte
 - d. No cell separators

6. A battery's "CCA" rating refers to what?
- How many amps the battery can deliver at 0 degrees F
 - How many amps the battery can deliver at 32 degrees F
 - How many amps the battery can deliver at 60 degrees F
 - How many amps the battery can deliver at 100 degrees F
7. Technician A says a "Marine" or "RV" battery can handle deep discharge cycles without damage, and is best for delivering low amperage output over a long period of time.
Technician B says AGM batteries typically outlast conventional wet cell lead-acid batteries by a year or two.
Who is right?
- Technician A only
 - Technician B only
 - BOTH Technician A and B
 - NEITHER Technician A nor B
8. Technician A says a new battery should be fully charged before it is installed because it can lose charge while in storage on a store shelf.
Technician B says a replacement alternator should have the same or higher amp rating as the original alternator.
Who is right?
- Technician A only
 - Technician B only
 - Both Technician A and B
 - Neither Technician A nor B
9. Any of the following are common causes of alternator failure EXCEPT:
- Overheating due to high charging loads
 - Bad battery
 - Excessive idling with high electrical loads on the system
 - Loose or slipping serpentine belt
10. Which of the following may cause a battery to lose charge and run down when a vehicle is parked and not started or driven for several days?
- Loose or corroded battery cables
 - An onboard module that fails to go into sleep mode
 - An open circuit in the alternator wiring harness
 - A blown fuse in the charging circuit
11. If a battery fails to hold a charge and keeps running down when a vehicle is driven, it could be caused by any of the following EXCEPT:
- Bad alternator
 - Loose or corroded battery cables
 - Bad battery
 - Bad starter connection
12. The voltage of a fully charged battery at 80 degrees F. should be what?
- 12.0 volts
 - 12.45 volts
 - 12.66 volts
 - 13.0 volts

13. What does a battery “Conductance Test” do?
- Determines the battery’s Cold Cranking Amp (CCA) rating
 - Determines the battery’s Reserve Capacity (RA) rating
 - Measures the battery’s State of Charge
 - Determines the battery’s condition (Good or Bad)
14. If an engine is idling with no lights or accessories on following a cold start, and the charging voltage at the battery reads 12.5 volts, what does this tell you about the charging system?
- The charging system is functioning normally
 - The battery is low and the charging system is charging the battery
 - The charging system is malfunctioning
 - The charging system may be overcharging the battery
15. If you suspect an alternator may be defective, having it bench tested at an auto parts store will tell you what?
- That the alternator is either Good or Bad
 - The alternator’s voltage output is in or out of range
 - The alternator’s current output is in or out of range
 - All of the above
16. Hybrid vehicles have a second “high voltage” battery for Stop/Start systems, and in some cases for powering a full electric drive mode. What are some typical voltage ratings of hybrid batteries?
- 24 to 48 volts
 - 48 to 100 volts
 - 48 to 300 volts
 - 100 to 500 volts
17. High voltage electrical components and wiring in most hybrid vehicles are color coded to reduce the risk of dangerous shocks. What color do you want to avoid when working on a hybrid?
- Red
 - Orange
 - Yellow
 - White
18. A Voltage Drop Test will tell you if a battery cable or wiring connection is good or bad. What is a “Good” voltage drop reading?
- 12 volts
 - 10 volts
 - 1 volt
 - 0.1 volt

(Answer Key on Next Page)

ANSWER KEY

1A, 2B, 3D, 4C, 5C, 6C, 7C, 8C, 9D, 10B, 11D, 12C, 13D, 14C, 15D, 16C, 17B, 18D



Battery, Charging & Starting System Article Links:

[Alternator Testing](#)

[How to Test Your Car Battery](#)

[Battery FAQs](#)

[Diagnosing A Battery That Runs Down](#)

[Battery Replacement](#)

[Battery Disconnect Problems](#)

[Battery Safety & Jump Starting](#)

[Hybrid Safety Hazards](#)

[Starting & Charging System Troubleshooting](#)

[Charging System Checks \(alternator testing\)](#)

[Alternator Failure Causes](#)

[How To Replace an Alternator](#)

[Starting & Charging System Service](#)

[High Output Alternators \(Why You May Need One\)](#)

[Starter Diagnosis](#)

[Troubleshooting electrical problems](#)

[Electrical Loads for Automotive Systems, Lighting and Accessories](#)

[Voltage Drop Testing](#)

[Automotive Electrical Circuits](#)

[Power Centers: Relays & Fuses](#)