Hybrid and Alternative Fuel Vehicles, 4th Edition
Chapter 8

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) What are the results of a voltmeter test of a battery and its state-of-charge?

2) What are the steps for performing a battery load test?

3) What battery types are most used in electric and hybrid electric vehicles?

4) Why can discharged batteries freeze?

5) What are the battery-rating methods?

1) After the surface change has been removed the battery voltage and state-of-charge (SOC) includes: 12.6+ volts = 100%
12.4 volts = 75%
12.2 volts = 50%
12.0 volts = 25%
Less than 11.9 volts = discharged
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2) To perform a battery load test, take the following steps:
STEP 1 Determine the CCA rating of the battery. The proper electrical load used to test a battery is one-half of the CCA rating or three times the ampere-hour rating, with a minimum 150 ampere load.
STEP 2 Connect the load tester to the battery. Follow the instructions for the tester being used.
STEP 3 Apply the load for a full 15 seconds. Observe the voltmeter during the load testing and check the voltage at the end of the 15-second period while the battery is still under load. A good battery should indicate above 9.6 V.
STEP 4 Repeat the test. Many battery manufacturers recommend performing the load test twice, using the first load period to remove the surface charge on the battery and the second test to provide a more true indication of the condition of the battery.
Wait 30 seconds between tests to allow time for the battery to recover. Results: If the battery fails the load test, recharge the battery and retest. If the load test is failed again, the battery needs to be replaced.
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3) Nickel-metal hydride (NiMH) battery and lithium-ion (Li-ion) technology are the two types of high- voltage batteries used today in hybrid electric and electric vehicles.
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4) When a lead-acid battery discharges, the electrolyte becomes almost water which can freeze when exposed to cold weather.
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5) The typical battery ratings include cold cranking amperes (CCA), cranking amperes (CA), Marine cranking amperes (MCA), reserve capacity and ampere hour rating.
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