

Exam

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) During the load testing, battery voltage should not drop below how many volts? 1) _____
A) 10.5 B) 7.5 C) 8.6 D) 9.6

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 2) A frozen battery can be thawed by charging it slowly. 2) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 3) What battery rating is tested at 32 deg F? 3) _____
A) Reserve capacity B) Battery voltage test
C) Cold-cranking amperes (CCA) D) Cranking amperes (CA)

- 4) Which battery rating is tested at 0 deg F (-18 C)? 4) _____
A) Battery voltage test B) Reserve capacity
C) Cold-cranking amperes (CCA) D) Cranking amperes (CA)

- 5) When charging a lead-acid (flooded-type) battery, _____. 5) _____
A) The initial charging rate should be about 35 amperes for 30 minutes
B) The battery temperature should not exceed 125°F (hot to the touch)
C) The battery may not accept a charge for several hours, yet still be a good (serviceable) battery
D) All of the above

- 6) Each cell of an automobile 12 volt battery can produce about _____ volts. 6) _____
A) 4.2 B) 4 C) 1.2 D) 2.1

- 7) Which type of battery is most used in hybrid electric vehicles? 7) _____
A) Sodium nickel chloride B) Lithium ion
C) Nickel metal hydride D) Nickel cadmium

- 8) Normal battery drain (parasitic drain) for a vehicle with computer and electronic circuits is _____ 8) _____
A) 150 to 300 milliamperes B) 2 to 3 amperes
C) 20 to 30 milliampere D) None of the above

- 9) Technician A says that electronic conductance testing can determine CCA, state-of-charge, and voltage of the battery. Technician B says that electronic conductance testing determines if there is a bad cell and the battery is not serviceable and should be replaced. Who is right? 9) _____
A) Technician A only B) Technician B only
C) Both A and B D) Neither A nor B

- 10) What is the most common location for a hybrid vehicle high voltage battery pack? 10) _____
A) Under the passenger side floor boards B) Under the hood
C) Under or behind the rear seat D) None of these

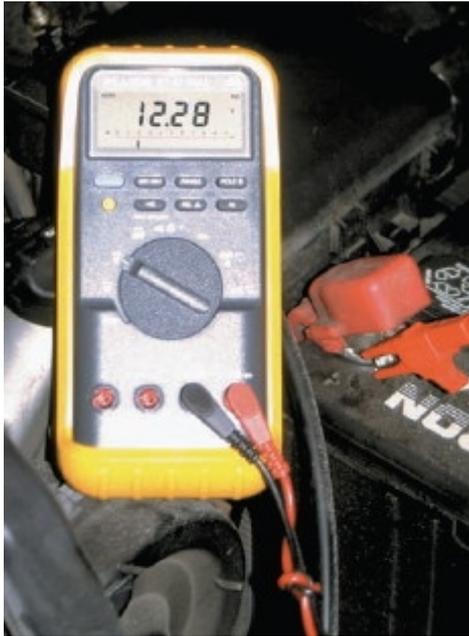
11) All of the following statements regarding NiMH batteries are true EXCEPT _____. 11) _____

- A) NiMH batteries use potassium hydroxide for electrolyte
- B) NiMH batteries can be housed in a steel container
- C) NiMH cells produce 3.6 volts
- D) NiMH batteries have excellent cycle life

12) A battery high rate discharge (load capacity) test is being performed on a 12 volt battery. Technician A says that a good battery should have a voltage reading of higher than 9.6 volts while under load at the end of the 15-second test. Technician B says that the battery should be discharged (loaded) to twice its CCA rating. Who is right? 12) _____

- A) A only
- B) B only
- C) Both A and B
- D) Neither A nor B

13) The reading on this DVOM means that the battery is _____. 13) _____



- A) Low on charge
- B) OK
- C) Overheated
- D) Not enough information

14) Technician A says the nominal voltage for ONE lead-acid battery cell is 1.2 volts. Technician B says the nominal voltage for ONE NiMH battery cell is 2.1 volts. Which technician is correct? 14) _____

- A) Technician A
- B) Technician B
- C) Both Technicians
- D) Neither Technician

15) When jump starting _____. 15) _____

- A) The last connection should be the positive post of the dead battery
- B) The last connection should be the engine block of dead vehicle
- C) The alternator must be disconnected on both vehicles
- D) Both A and C

- 16) Deep cycling means _____. 16) _____
 A) Overcharging the battery
 B) Overfilling or underfilling the battery with water
 C) The battery is overfilled with acid (H₂SO₄)
 D) The battery is fully discharged and then recharged
- 17) A fully charged lead-acid battery should have a voltage of _____ volts. 17) _____
 A) 12.0 B) 12.6 or higher C) 12.011 D) 12.2
- 18) A battery measures 12.4 volts after removing the surface charge. This battery is charged at what percent? 18) _____
 A) 75% B) 25% C) 100% D) 50%
- 19) An AGM battery differs from a conventional flooded battery in what way? 19) _____
 A) Each cell has a voltage sensor
 B) The electrolyte is absorbed into glass separator and will not spill
 C) It does not contain lead
 D) It does not contain electrolyte
- 20) Technician A says that dynamic voltage is the voltage (usually of a battery) that exists without a load being applied. Technician B says that open circuit voltage (OCV) is the voltage of the power source (battery) with the circuit in operation. Who is right? 20) _____
 A) Technician A only B) Technician B only
 C) Both A and B D) Neither A nor B

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

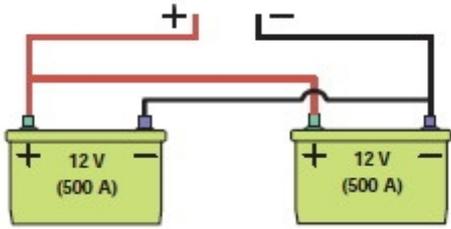
- 21) A voltmeter or test light can be used to measure battery drain. 21) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 22) Technician A says that NiMH batteries are an alkaline design. Technician B says that high-voltage battery packs are constructed using NiMH cells connected in parallel. Which technician is correct? 22) _____
 A) Technician A B) Technician B
 C) Both Technicians D) Neither Technician
- 23) When charging a lead-acid (flooded-type) battery, _____. 23) _____
 A) The battery temperature should not exceed 125°F (hot to the touch)
 B) The battery may not accept a charge for several hours, yet still be a good (serviceable) battery
 C) The initial charging rate should be about 35 amperes for 30 minutes
 D) All of the above

24) What is the voltage of this battery pair when measured at the + and - cables?

24) _____



A) 24 volts

B) 500 volts

C) 1000 volts

D) 12 volts

25) When a battery becomes completely discharged, both positive and negative plates become _____ and the electrolyte becomes _____.

25) _____

A) $\text{PbO}_2 / \text{H}_2\text{SO}_4$

B) $\text{PbSO}_4 / \text{H}_2\text{SO}_4$

C) $\text{H}_2\text{SO}_4 / \text{Pb}$

D) $\text{PbSO}_4 / \text{H}_2\text{O}$