

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

- 1) Technician A says that a discharged battery (lower than normal battery voltage) can cause solenoid clicking. Technician B says that a discharged battery or dirty (corroded) battery cables can cause solenoid clicking. Who is right? 1) _____
 - A) Technician A only
 - B) Technician B only
 - C) Both A and B
 - D) Neither A nor B

- 2) The neutral safety switch is located _____ in the starter electrical circuit. 2) _____
 - A) Inside the ignition switch itself
 - B) Between the ignition switch and the starter solenoid
 - C) In the battery cable between the battery and the starter solenoid
 - D) Between the starter solenoid and the starter motor

- 3) Which starting system component uses a small amount of current to control a large amount of current? 3) _____
 - A) Starter solenoid or relay
 - B) Neutral safety switch
 - C) Starter drive
 - D) Starter brushes

- 4) A technician connects one lead of a digital voltmeter to the positive (+) terminal of the battery and the other meter lead to the battery terminal (B) of the starter solenoid and then cranks the engine. During cranking, the voltmeter displays a reading of 878 mV. Technician A says that this reading indicates that the positive battery cable has too high resistance. Technician B says that this reading indicates that the starter is defective. Who is right? 4) _____
 - A) Technician A only
 - B) Technician B only
 - C) Both A and B
 - D) Neither A nor B

- 5) Which safety device is used on vehicles with manual transmissions? 5) _____
 - A) Neutral safety switch
 - B) Clutch safety switch
 - C) Both A and B
 - D) Neither A nor B

- 6) Which of these can cause a starter grinding noise? 6) _____
 - A) Seized engine
 - B) Loose flywheel
 - C) Defective starter drive
 - D) Neutral safety switch

- 7) Two technicians are discussing what could be the cause of slow cranking and excessive current draw. Technician A says that an engine mechanical fault could be the cause. Technician B says that the starter motor could be binding or defective. Who is right? 7) _____
 - A) Technician A only
 - B) Technician B only
 - C) Both A and B
 - D) Neither A nor B

- 8) What should be done first before removing the starter motor from the vehicle? 8) _____
 - A) Disconnect battery cables
 - B) Disconnect starter relay
 - C) Remove starter solenoid
 - D) Remove battery

- 9) The starter motor can produce up to _____ horsepower. 9) _____
 - A) 20
 - B) 8
 - C) 5
 - D) None of these

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

10) A warm connection at the battery negative post indicates a good connection. 10) _____

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

11) If the clearance between the starter pinion and the engine flywheel is too great, _____. 11) _____
A) The starter drive will not rotate at all
B) The starter will produce a high pitched whine after the engine starts
C) The solenoid will not engage the starter drive
D) The starter will produce a high pitched whine during cranking

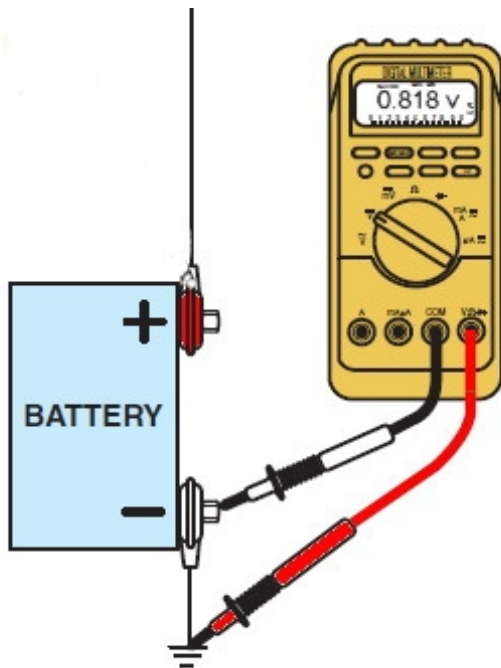
12) A voltage drop test on the starter control circuit is used to test which of these starter component(s)? 12) _____
A) Field coils
B) Commutator
C) Wiring and connections
D) Starter solenoid and field coil

13) If the starter "whines" when engaged, which of these is a possible cause? 13) _____
A) Worn leather armature brake
B) Worn or defective starter drive
C) Open neutral safety switch
D) Defective solenoid

14) Technician A says that the cranking circuit should be tested for proper amperage draw. Technician B says that an open in the control circuit will not prevent starter motor operation. Who is right? 14) _____
A) Technician A only
B) Technician B only
C) Both A and B
D) Neither A nor B

15) A vehicle equipped with a V-8 engine does not crank fast enough to start. Technician A says that the battery could be discharged or defective. Technician B says that the negative cable could be loose at the battery. Who is right? 15) _____
A) Technician A only
B) Technician B only
C) Both A and B
D) Neither A nor B

16) This voltage reading was obtained while cranking the engine. The indicated reading (0.816 V) is _____ 16) _____



- A) Too low
- B) An inconclusive measurement
- C) Incorrectly done
- D) Too high

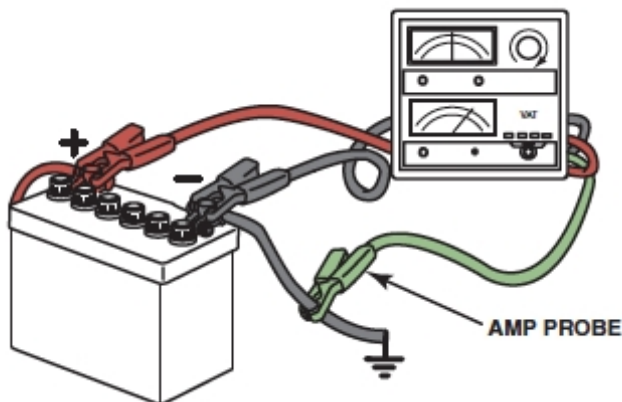
17) Slow cranking by the starter can be caused by all of these, EXCEPT _____ 17) _____

- A) Engine mechanical problems
- B) Open neutral safety switch
- C) A low or discharged battery
- D) Corroded or dirty battery cables

18) All of these can cause a starter not to rotate, EXCEPT _____ 18) _____

- A) Seized engine crankshaft
- B) Defective armature
- C) Defective starter drive
- D) Shorted field coils

19) What test is being performed in this illustration? 19) _____



- A) Starter amperage draw test
- B) Ground side voltage drop test
- C) Positive side voltage drop test
- D) Battery load test

20) The starter motor on a V-6 engine is being tested for starter amperage draw. The initial surge current was about 210 amperes and about 160 amperes during cranking. Technician A says that the starter is defective and should be replaced because the current flow exceeds 200 amperes. Technician B says that this is normal current draw for a starter motor for a V-6 engine. Who is right?

20) _____

- A) Technician A only
- C) Both A and B

- B) Technician B only
- D) Neither A nor B