

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) \_\_\_\_\_

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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

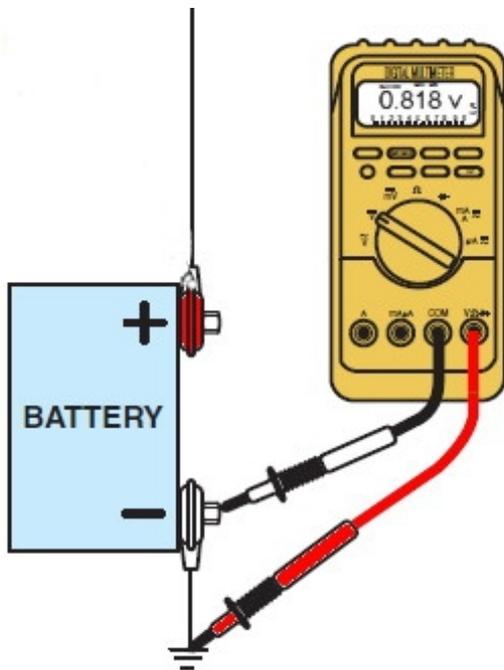
12) A voltage drop test on the starter control circuit is used to test which of these starter component(s)? 12) \_\_\_\_\_  
A) Field coils  
B) Commutator  
C) Wiring and connections  
D) Starter solenoid and field coil

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

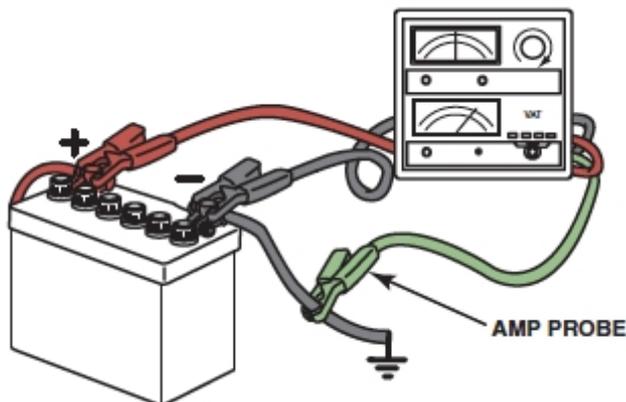
17) Slow cranking by the starter can be caused by all of these, EXCEPT \_\_\_\_\_ 17) \_\_\_\_\_

- 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