1) What is the function of the neutral safety switch?

2) What is the function of commutator bars in a starter motor?

3) What is the function of Pole Shoes in a starter motor?

4) Why does a starter motor draw less current when it spins faster?

5) What is the function of the overrunning clutch in a starter motor?

6) Why do starting systems use a solenoid or relay?

7) Why do starter solenoids have pull-in and hold-in windings?

8) What does a series-parallel switch do? (ask in class)

9) What is the first step to removing a starter?
10) How do you test the battery or starter cables?

11) What can cause the starter to spin, but not turn over the engine?

12) A starter will not turn. Why would you turn on the headlamps and try to crank the motor again? (ask in class)

13) Explain how to volt drop the battery ground cable.

14) Explain how to do a starter no-load test

15) Explain how to do a starter current draw test? (with the starter in the vehicle)

16) How do you do a cranking voltage (starter voltage) test?
Identify the two points to connect a voltmeter to perform the following tests

Example: ______ A B ______ Check battery voltage

_______ Check voltage drop for entire starter ground circuit

_______ Check voltage drop for ground cable of battery

_______ Check for high resistance in ignition switch

_______ Check for bad ground of starter relay

_______ Check for high resistance in starter feed (insulated) circuit

_______ Check for voltage available to the starter during cranking
17) You are diagnosing a no crank condition (starter will not operate). After connecting a voltmeter to points A and G, and placing the ignition switch in the start position the voltmeter reads 0 Volts. Where is the problem?
A) Ignition switch
B) Starter relay
C) Starter motor or solenoid
D) Insufficient data to make a diagnosis

18) You are diagnosing a no crank condition (starter will not operate). After connecting a voltmeter to points G and H, and placing the ignition switch in the start position the voltmeter reads 12.6 Volts. Where is the problem?
A) Ignition switch
B) Starter relay
C) Starter motor or solenoid
D) Insufficient data to make a diagnosis

19) While holding ignition switch in the crank position, where would you place voltmeter leads to insure the starting control circuit is operating?

20) While holding ignition switch in the crank position, where would you place voltmeter leads to insure the ignition switch and starting safety switch are operating?

21) You are diagnosing a no crank condition (starter will not operate). After connecting a voltmeter to points I and F, and placing the ignition switch in the start position the voltmeter reads 12.6 Volts. Where is the problem?
A) Starter motor not grounded
B) Starter relay not grounded
C) Battery negative cable open circuit
D) Insufficient data to make a diagnosis