Name: _____ Class: _____ Date: _____

Chapter 01: Introduction to the Automobile

1. Older cars had heavy frames, but most cars are built today with what is known as a unibody design.

a. True
b. False

ANSWER: True
POINTS: 1

2. In a spark-ignition engine, gasoline is especially combustible when one part of it is atomized with about 15 parts of air.

a. True
b. False

ANSWER: True
POINTS: 1

3. Liquid gasoline does not burn.

a. True
b. False

ANSWER: True
POINTS: 1

4. Vintage engines have a fuel injection system that mixes fuel and air in response to the amount of air that flows through it.

a. True
b. False

ANSWER: False
POINTS: 1

5. Unlike diesel engines, gasoline engines do not have spark plugs or an ignition system because spark timing is controlled by the fuel injection system.

a. True
b. False

ANSWER: False
POINTS: 1

6. During the four-stroke cycle, which event is LEAST-Likely to occur during the power stroke?

a. The piston moves back up, forcing any remaining exhaust gas from the cylinder through the open exhaust valve.
b. The burning fuel expands rapidly.
c. The piston moves back down in the cylinder.
d. The exhaust valve opens as the piston approaches the bottom of its travel.

ANSWER: a
POINTS: 1

7. While discussing the four-stroke cycle, Technician A says that during the intake stroke, the piston is pulled down by the turning crankshaft, creating a vacuum above it. Technician B says this event occurs during the exhaust stroke. Who is right?

a. A only
b. B only
c. Both A and B
d. Neither A nor B

ANSWER: a
POINTS: 1

8. All of the following support the engine's operation EXCEPT:

a. the fuel system
b. the electrical system
c. the drive shaft
d. the lubrication system

ANSWER: c
POINTS: 1

9. ____ is circulated by the water pump through water jackets in the engine's cylinder block. It carries heat to the radiator, where it can be carried away by the outside air.

a. Torque
b. Coolant
c. Fuel
d. Steam

ANSWER: b
POINTS: 1

10. During a discussion about the lubrication system, Technician A says that, in theory, during a 1,000-mile trip a properly operating lubrication system will allow about as much wear between parts as occurs during the first 15 minutes of engine operation. Technician B says that the system will allow about as much wear between parts as occurs during the first 15 seconds of engine operation in the morning before oil has reached all of the engine's parts. Who is correct?

a. A only
b. B only
c. Both A and B
d. Neither A nor B

ANSWER: b
POINTS: 1

11. All of the following are included in the engine's electrical system EXCEPT:

a. the ignition system
b. the starting system
c. the powertrain
d. the charging system

ANSWER: c
POINTS: 1

12. ____ react to temperature, airflow, engine load, road speed, and oxygen content in the exhaust stream.

a. Torques
b. Actuators
c. Pistons
d. Sensors

ANSWER: d
POINTS: 1

13. Which of the following would LEAST-Likely be found on a rear-wheel drive vehicle?

a. Transaxle
b. Drive shaft
c. Transmission
d. Differential

ANSWER: a
POINTS: 1

14. On a manual transmission vehicle, the MOST-Likely cause of a change in torque would be:

a. the depression of the clutch
b. changing gears
c. the uncoupling of the powertrain
d. engine load

ANSWER: b
POINTS: 1

15. On a vehicle with automatic transmission, which of the following would MOST-Likely cause the rear wheels to rotate at different speeds as the vehicle goes around corners?

a. The drive shaft
b. The transaxle
c. The clutch
d. The differential

ANSWER: d
POINTS: 1

16. The _____ includes the suspension and also supports the engine and the car body.
ANSWER: chassis
POINTS: 1

17. The piston is sealed to the cylinder with _____ that slide against the cylinder wall as the piston moves up and down.
ANSWER: piston rings
POINTS: 1

18. Three types of fuel delivery systems have been used on automobile four-stroke cycle engines: carburetor, gasoline fuel injection, and _____.
ANSWER: diesel fuel injection
POINTS: 1

19. Air rushing through an engine's intake system is mixed with fuel on its way to the cylinders. This results in lower pressure in the intake manifold, which is known as _____.
ANSWER: vacuum
POINTS: 1

20. The purpose of the _____ is to reduce or eliminate any remaining pollutants in the engine's exhaust.
ANSWER: emission system
POINTS: 1

21. Briefly describe the basic operating principle of a reciprocating gasoline engine.
ANSWER: The principle of its operation is simple. The piston moves up in the cylinder, compressing a mixture of air and fuel in front of it. Compressing the air and fuel makes it very flammable. When the piston reaches the top of its travel, the *air-fuel mixture* is ignited. As the piston is pushed down in the cylinder by the expanding gases, it pushes on the rod, forcing the crankshaft to rotate.

Power from the rotation of the crankshaft turns the wheels. As the crankshaft turns, the piston is returned to the top of the cylinder to repeat the cycle again. The continuing up-and-down motion of the piston is why the engine is called a reciprocating engine.

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POINTS: 1

22. What is the purpose of the ignition system and how does it operate?

ANSWER: The ignition system has the job of creating and distributing a timed spark to the engine's cylinders. Through a process called electromagnetic induction, a voltage of 5,000 to about 100,000 volts (on some of the newer systems) is created. The voltage causes a spark to jump a gap at the spark plugs to ignite the air-fuel mixture. The spark is timed to occur just before the top of the compression stroke. This is called ignition timing.

POINTS: 1

23. What is the relationship between the charging system and the ignition system? What is the role of the alternator?

ANSWER: As the vehicle is operated, electricity is drawn from the charging system to operate the ignition system, body electrical accessories, or lighting. The charging system includes an alternator, which is driven by a belt on the engine's crankshaft pulley. The alternator produces electrical current and forces it into the battery to recharge it. Battery voltage is monitored, and the alternator is switched on or off depending on charging requirements.

POINTS: 1

24. What is the difference between a front-wheel drive and a rear-wheel drive vehicle?

ANSWER: Front-wheel-drive cars use a transaxle and axle shafts, while rear-wheel-drive cars use a transmission and drive shaft coupled to a differential and rear axles. Transmissions can be either manually shifted using a clutch, or they can shift automatically.

POINTS: 1

25. What is the purpose of the exhaust system and what are its components?

ANSWER: The exhaust system carries exhaust from the engine to the rear of the car. It also quiets sound. The exhaust manifold, pipes, a muffler, a catalytic converter, and sometimes a resonator make up the exhaust system components.

POINTS: 1