

Name \_\_\_\_\_

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

- 1) The upper portion of a two part intake manifold is often called the \_\_\_\_\_. 1) \_\_\_\_\_
  - A) Housing
  - B) Lower part
  - C) Plenum
  - D) Vacuum chamber
  
- 2) What is annealing? 2) \_\_\_\_\_
  - A) A heat-treating process that takes out the brittle hardening of a cast iron casting.
  - B) The process of using valve overlap to leave some exhaust gas in the combustion chamber, eliminating the need for an EGR valve.
  - C) The process of using valve overlap to allow the exhaust pulses to draw intake air into the cylinder.
  - D) Using hollow-headed bolts to connect an exhaust manifold to a cylinder head.
  
- 3) Exhaust passages are included in some intake manifolds. Technician A says that the exhaust passages are used for exhaust gas recirculation (EGR) systems. Technician B says that the exhaust heat is used to warm the intake charge on some engines equipped with a throttle-body-type fuel-injection system. Which technician is correct? 3) \_\_\_\_\_
  - A) Technician A only
  - B) Technician B only
  - C) Both technicians
  - D) Neither technician
  
- 4) EGR systems \_\_\_\_\_. 4) \_\_\_\_\_
  - A) Reduce NO<sub>x</sub> emissions
  - B) Are used on all vehicles
  - C) Both A and B
  - D) Neither A nor B
  
- 5) Fuel separation with a TBI system can result in \_\_\_\_\_. 5) \_\_\_\_\_
  - A) Poor throttle response
  - B) Poor fuel economy
  - C) Both A and B
  - D) Neither A nor B
  
- 6) Technician A says that the Helmholtz resonator is used to speed up incoming air into the intake manifold. Technician B says that the Helmholtz resonator is used to reduce intake noise. Which technician is correct? 6) \_\_\_\_\_
  - A) Technician A only
  - B) Technician B only
  - C) Both technicians
  - D) Neither technician

- 7) The intake manifold of a port fuel-injected engine \_\_\_\_\_. 7) \_\_\_\_\_
- A) Uses a dual heat riser
  - B) Contains a leaner air-fuel mixture than does the intake manifold of a TBI system
  - C) Contains only fuel (gasoline)
  - D) Contains only air
- 8) Which statement is correct? 8) \_\_\_\_\_
- A) Throttle body injected vehicles do not require heating of the intake air charge.
  - B) Port fuel injected vehicles mix the fuel and air charge in the intake manifold.
  - C) With port fuel injection, fuel is injected near the intake valve.
  - D) All of these are correct.
- 9) Which of the following is correct? 9) \_\_\_\_\_
- A) Exhaust manifolds must be able to slide on the cylinder head slightly as they expand due to high heat.
  - B) Many exhaust systems are tuned to reduce noise and optimize flow.
  - C) Many exhaust systems have heat shields to protect the spark plugs and wires.
  - D) All these are correct.
- 10) Why do many port fuel injected engines use long intake runners? 10) \_\_\_\_\_
- A) To reduce exhaust emissions
  - B) To heat the incoming air
  - C) To increase high RPM power
  - D) To increase low RPM torque

## Answer Key

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- 1) C  
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- 2) A  
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- 3) C  
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- 4) A  
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- 5) C  
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- 6) B  
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- 7) D  
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- 8) C  
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- 9) D  
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- 10) D  
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