Automotive Electrical and Engine Performance 9th Edition
Chapter 42 – PCV and SAI Systems
Multiple Choice Questions Quiz A

1. What is the main purpose of the Positive Crankcase Ventilation (PCV) system?

a) To recirculate crankcase vapors back into the intake manifold

b) To increase air pressure in the exhaust manifold

c) To direct exhaust gases into the crankcase for re-combustion

d) To reduce the combustion temperature and prevent knocking

2. Technician A says the PCV valve helps regulate the air-fuel mixture at idle. Technician B says the PCV valve prevents crankcase explosions during a backfire. Who is correct?

a) Technician A only

b) Technician B only

c) Both Technician A and Technician B

d) Neither Technician A nor B

3. What does a plugged PCV system most likely cause?

a) Increased fuel efficiency

b) Rough idle and excessive oil consumption

c) Higher exhaust emissions of NOx

d) Decreased combustion temperatures

4. The purpose of the secondary air injection (SAI) system is to:

a) Prevent engine overheating

b) Reduce exhaust emissions by injecting air into the exhaust

c) Supply additional fuel during acceleration

d) Recirculate exhaust gases back into the intake manifold

5. Which component in the SAI system prevents exhaust gases from flowing backward into the air pump?

a) The air diverter solenoid

b) The air-fuel ratio sensor

c) The oxygen sensor

d) The check valve

6. During cold start-up, the secondary air pump directs air into the:

a) Catalytic converter

b) Exhaust manifold

c) Air filter assembly

d) Intake manifold

7. A failing PCV valve can often cause:

a) Accumulation of oil in the air filter housing

b) Consistently high engine idle

c) Reduced engine coolant temperature

d) Enhanced catalytic converter efficiency

8. In an orifice-controlled PCV system, what replaces the traditional PCV valve?

a) A calibrated orifice in the air filter

b) A restricted opening that regulates airflow based on pressure

c) An adjustable valve controlled by the PCM

d) A vacuum-actuated bypass valve

9. Which diagnostic tool would most accurately measure crankcase vacuum in a PCV system test?

a) Voltmeter

b) Torque wrench

c) Manometer

d) Timing light

10. What happens in a properly functioning PCV valve when the engine backfires?

a) The valve opens to release pressure

b) The valve closes to prevent flames from entering the crankcase

c) The valve directs air into the intake manifold

d) The valve seals to maintain vacuum in the intake system

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Answer Key Quiz A

Correct Answers:

1. a
2. c
3. b
4. b
5. d
6. b
7. a
8. b
9. c
10. b