Automotive Electrical and Engine Performance 8th Edition
Chapter 15 – Variable Valve Timing and Displacement Systems
Quiz B

1. What is the primary purpose of a variable valve timing system?

a. Reduce ignition timing variance during acceleration

b. Optimize exhaust gas recirculation without an EGR valve

c. Improve fuel injector calibration at low RPM

d. Increase valve overlap to improve combustion efficiency

2. What happens when the intake camshaft timing is advanced at low RPM?

a. Improves low-speed torque by closing the intake valve earlier

b. Reduces oxides of nitrogen emissions by increasing overlap

c. Enhances high-speed power by extending valve duration

d. Increases fuel economy by delaying the closing of exhaust valves

3. Which component in a vane phaser system controls camshaft positioning?

a. Crankshaft position sensor (CKP)

b. Camshaft position sensor (CMP)

c. Pulse-width-modulated oil control valve (OCV)

d. Variable timing sprocket assembly

4. What pulse width on a camshaft phaser results in zero oil flow?

a. 0%

b. 25%

c. 50%

d. 100%

5. Which feature is shared by both spline and vane cam phasers?

a. They use helical splines to adjust camshaft timing

b. They rely on oil pressure changes to modify timing positions

c. They operate independently of PCM-controlled signals

d. They require mechanical adjustment for idle timing

6. How does incorrect oil viscosity affect variable valve timing operation?

a. It triggers a crankshaft misalignment error

b. It reduces oil flow to the camshaft phasers

c. It clogs actuator control valve screens, limiting oil flow

d. It causes ignition timing faults in high-RPM conditions

7. Which diagnostic trouble code (DTC) indicates an issue with the exhaust camshaft actuator?

a. P0011

b. P0014

c. P0013

d. P0022

8. What is the function of a two-stage hydraulic valve lifter in variable displacement systems?

a. To increase valve lift for high-RPM performance

b. To deactivate valves during low-load engine operation

c. To enhance cylinder sealing through exhaust gas compression

d. To control camshaft rotation for smoother idle operation

9. Which system utilizes a magnetically controlled vane phaser?

a. Dynamic Fuel Management systems

b. Overhead camshaft engines with dual cam timing

c. Cam-in-block OHV configurations only

d. Variable Valve Timing and Lift Electronic Control systems

10. What criteria must be met to enable a variable displacement system?

a. Oil pressure between 28 and 75 PSI

b. Vacuum levels below the activation threshold

c. Cylinder deactivation achieved through spark suppression

d. Throttle position sensor set at maximum resistance

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Correct Answers:

1. b

2. a

3. d

4. c

5. a

6. c

7. a

8. d

9. b

10. a