

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

1. What is the purpose of the camshaft position actuator oil control valve (OCV) in a VVT system?
 - a. To adjust fuel injection timing for optimal combustion
 - b. To control the flow of oil to the camshaft position actuator
 - c. To measure engine oil pressure for diagnostic purposes
 - d. To regulate crankshaft speed during idle

2. Which variable valve timing system allows exhaust gas recirculation (EGR) without a separate valve?
 - a. Intake-only VVT
 - b. Dual-camshaft VVT
 - c. Exhaust-only VVT
 - d. Cam-in-block VVT

3. What is the primary function of the spline phaser in an overhead camshaft (OHC) engine?
 - a. To control fuel economy during low RPM
 - b. To retard or advance the camshaft timing using oil pressure
 - c. To synchronize crankshaft and camshaft operation
 - d. To enable smooth transitions between low and high-speed cams

4. How does the vane phaser operate in a variable valve timing system?
 - a. By utilizing engine vacuum to control camshaft timing
 - b. By switching between intake and exhaust cams
 - c. By rotating the crankshaft to adjust timing
 - d. By varying oil pressure on either side of rotor vanes

5. What condition typically triggers a diagnostic trouble code (DTC) related to variable valve timing?
- a. Engine coolant temperature exceeding 200°F
 - b. Low oil pressure or a clogged filter screen
 - c. Fuel injection misalignment with the crankshaft
 - d. Misfiring in multiple cylinders
6. What is the primary purpose of the high overlap mode in a VVT system?
- a. To increase engine performance during high RPM
 - b. To minimize fuel consumption during highway cruising
 - c. To enable smooth idling in low-speed conditions
 - d. To reduce NOx emissions by trapping exhaust gases in the combustion chamber
7. Which VVT component uses a pulse-width-modulated (PWM) signal for precise control?
- a. Spline phaser
 - b. Vane phaser
 - c. Magnetically controlled vane phaser
 - d. Camshaft position sensor
8. How does a variable displacement system improve fuel economy?
- a. By deactivating half the cylinders under low-load conditions
 - b. By optimizing valve overlap for each cylinder
 - c. By retarding the timing of the intake valve during cruising
 - d. By advancing the crankshaft angle during acceleration
9. What is the function of the locking pin in a variable displacement system lifter?
- a. To lock the camshaft in a fixed position during deactivation
 - b. To secure the inner and outer lifter sleeves during normal operation
 - c. To regulate oil pressure across the camshaft actuator
 - d. To prevent spark plug fouling during deactivation

10. What sensor data does the PCM rely on to determine camshaft timing adjustments?

- a. Engine speed (RPM) and crankshaft position (CKP) sensor
- b. Barometric pressure (BARO) and camshaft position (CMP) sensor
- c. Both a and b
- d. Only engine load sensor

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

Correct Answers:

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