Automotive Technology 6th Edition
Chapter 32

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) How is the camshaft driven by the crankshaft?

_____
_____
_____
_____
_____
_____

2) How does variable valve timing help improve engine operation and reduce emissions?

_____
_____
_____
_____

3) How is a composite camshaft constructed?

_____
_____
_____
_____

4) What is meant by an "interference" engine?

_____
_____

5) What drives the high-pressure fuel pump on a GDI engine?

_____
_____

1) The camshaft is driven by:
   - Timing gears
   - Timing chains
   - Timing belts

   The gear or sprocket on the camshaft has twice as many teeth, or notches, as the one on the crankshaft. This results in two crankshaft revolutions for each revolution of the camshaft. The camshaft turns at one-half the crankshaft speed in all four-stroke cycle engines.
   Page Ref: 340
2) Varying the exhaust and/or the intake camshaft position allows for reduced exhaust emissions and improved performance. Most systems use engine oil to rotate the camshaft, using a pulse-width modulated signal to the control solenoid. PCM uses the camshaft position (CMP) sensor to monitor the camshaft position.
   Page Ref: 357
3) Composite camshafts, which use a lightweight tubular shaft with hardened steel lobes press-fitted over the shaft. (The actual production of these camshafts involves placing the lobes over the tube shaft in the correct position. A steel ball is then drawn through the hollow steel tube, expanding the tube and securely locking the cam lobes in position.
   Page Ref: 341
4) On an interference engine, a broken timing belt causes some of the valves that are open to hit the pistons, causing major engine damage.
   Page Ref: 344
5) The high-pressure fuel pump on a gasoline direct injected (GDI) engine is driven by the camshaft.
   Page Ref: 340