

Name \_\_\_\_\_

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

1) How can the use of an electronic throttle control (ETC) system improve fuel economy?

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2) What component parts are included in an ETC system?

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3) What parts can be deleted if an engine uses an electronic throttle control (ETC) system instead of a conventional accelerator pedal and cable to operate the throttle valve?

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4) What is the default or limp-in position of the throttle plate?

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5) How is the operation of the throttle different on a system that uses an electronic throttle control system compared with a conventional mechanical system?

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## Answer Key

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1) The use of an electronic throttle control system can improve fuel economy by allowing the PCM to learn the air-fuel mixture, introduce more exhaust gas recirculation (EGR), and open the throttle more to reduce pumping losses without affecting the speed of the vehicle.

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2) The components in an electronic throttle control system include:

- Accelerator pedal position (APP) sensor
- Throttle body assembly with actuator motor
- Throttle position (TP) sensor

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3) The parts that can be deleted include:

- Throttle cable and linkage (most applications)
- Cruise control actuators
- Idle air control

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4) The default or limp-in position of the throttle is 16% to 20% open, which would result in an engine speed of 1,200 to 1,500 RPM.

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5) Under most conditions, the driver of the vehicle will not detect any difference in the operation of the throttle or in the performance of the engine. There are some situations where the use of an ETC system could be noticed such as:

- When the accelerator is depressed when the engine is at idle speed and the gear selector is in PARK or NEUTRAL, the engine speed may not increase or if it does, it will be less than normal.
- While cruising at highway speed, the engine speed may or may not react to slight movement of the accelerator pedal.

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