Automotive Engine Performance, 5th Edition
Chapter 25

Name_____

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

1) Why are wide-band oxygen sensors used instead of conventional zirconia sensors?

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2) How does a wide-range oxygen sensor work?

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3) How is the heater different for a wide-band oxygen sensor compared with a conventional zirconia oxygen sensor?

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4) How can a wide-band oxygen sensor be tested?

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5) What type of construction is used to make wide-band oxygen sensors?

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1) Wide-band oxygen sensors are used to allow the engine to cover a broader range of air-fuel ratios and allow the vehicle to meet more stringent exhaust emission standards.
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2) A wide-range oxygen sensor uses two zirconia cells: a pump cell and a Nernst cell. The PCM applies a small electrical current into the pump cell to keep the Nernst cell at 450 mV.
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3) The heater used in a wide-band oxygen sensor is designed to heat the sensor to a much higher temperature of 1,200°F to 1,400°F (650°C to 760°C) compared with about 600°F (315°C) for a conventional zirconia oxygen sensor.
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4) A dual cell wide-band oxygen sensor can be tested using a voltmeter, scope, and scan tool. A single cell wide-band oxygen sensor can be tested using a milliammeter or a scan tool.
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5) Wide-band oxygen sensors can be made in either a cup or planar design and either using a dual cell or single cell design.
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