

**Automotive Electrical and Engine Performance 8th Edition**  
**Chapter 16 – Temperature and Throttle Position Sensors**  
**Quiz B**

1. What is the primary function of an engine coolant temperature (ECT) sensor?
  - a. Regulating the engine's ignition timing exclusively
  - b. Controlling air–fuel ratio during closed-loop operation
  - c. Providing temperature input for ignition timing and fuel adjustments
  - d. Enhancing the accuracy of manifold absolute pressure readings
  
2. What does the term "negative temperature coefficient" (NTC) mean for sensors?
  - a. Resistance increases as temperature increases
  - b. Resistance decreases as temperature increases
  - c. Voltage output increases as temperature decreases
  - d. Voltage remains constant despite temperature changes
  
3. Which factor can skew ECT sensor readings and lead to a lean air–fuel mixture?
  - a. A low-resistance short in the ECT sensor
  - b. A high-resistance open in the ECT circuit
  - c. A partially clogged ECT connector
  - d. An ECT sensor exposed to air pockets in the coolant
  
4. What is the purpose of the stepped ECT circuit in certain vehicles?
  - a. To adjust timing automatically when the engine is hot
  - b. To enable more accurate temperature readings at different ranges
  - c. To regulate voltage for the alternator at high engine speeds
  - d. To simplify coolant pressure monitoring

5. How does a faulty intake air temperature (IAT) sensor affect engine performance?
- a. Delays ignition timing in cold weather
  - b. Causes incorrect air–fuel adjustments based on temperature
  - c. Prevents the PCM from entering closed-loop operation
  - d. Disables the oxygen sensor
6. Which tool is most effective for measuring the resistance of a temperature sensor?
- a. Scan tool with real-time graphing capability
  - b. Oscilloscope for waveforms
  - c. Digital multimeter set to ohms
  - d. Data logging software on a PCM
7. What voltage would you expect to read at the throttle position sensor (TPS) at idle?
- a. 1.5 volts
  - b. 0.5 volts
  - c. 4.5 volts
  - d. 5 volts
8. How does the PCM use the throttle position sensor for transmission control?
- a. To adjust shift points during wide-open throttle
  - b. To monitor fluid temperature indirectly
  - c. To calculate RPM ranges for overdrive activation
  - d. To disable the air-conditioning compressor under heavy loads
9. Which sensor does the throttle position sensor typically back up in case of failure?
- a. Oxygen sensor
  - b. MAF sensor
  - c. MAP sensor
  - d. Cylinder head temperature sensor

10. What is the effect of a faulty EGR temperature sensor?

- a. High oxides of nitrogen (NO<sub>x</sub>) emissions
- b. Low exhaust backpressure readings
- c. False cylinder misfire detection
- d. Premature ignition timing errors

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**Correct Answers:**

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