

**Automotive Electrical and Engine Performance 9th Edition**  
**Chapter 31 – Temperature and Throttle Position Sensors**  
**Multiple Choice Questions Quiz A**

1. What is the purpose of an Engine Coolant Temperature (ECT) sensor in a modern vehicle?
  - a) To allow precise control of fuel mixture based on engine temperature
  - b) To monitor the radiator's coolant level
  - c) To activate the cooling fan when temperatures rise
  - d) To increase engine power during startup
  
2. A typical Engine Coolant Temperature (ECT) sensor uses which of the following principles to function?
  - a) Inductive reactance to sense temperature
  - b) Positive Temperature Coefficient (PTC), where resistance increases with temperature
  - c) Capacitance to measure temperature changes
  - d) Negative Temperature Coefficient (NTC), where resistance decreases with temperature
  
3. When testing the ECT sensor using a multimeter, what should the resistance measure at approximately 70°F (20°C)?
  - a) Approximately 10,000 ohms
  - b) Close to 1,000 ohms
  - c) Around 3,000 ohms
  - d) Less than 500 ohms
  
4. In an automotive scan tool test, disconnecting the ECT sensor should result in a reading of approximately:
  - a) -40°F (-40°C)
  - b) 100°F (38°C)
  - c) 285°F (140°C)
  - d) 32°F (0°C)

5. Which type of sensor is the Intake Air Temperature (IAT) sensor, and what is its role?
- a) A thermocouple, used to detect pressure changes in the intake manifold
  - b) An NTC thermistor, providing air temperature data to optimize fuel delivery and spark timing
  - c) A capacitance sensor, used to adjust idle speed based on temperature
  - d) A resistance thermistor, to measure engine load
6. Which sensor serves as a backup in the event of ECT sensor failure?
- a) Intake Air Temperature (IAT) sensor
  - b) Oxygen sensor
  - c) Manifold Absolute Pressure (MAP) sensor
  - d) Cylinder Head Temperature (CHT) sensor
7. When measuring the Throttle Position (TP) sensor, what voltage range would indicate a properly functioning sensor at idle and Wide Open Throttle (WOT)?
- a) 0.5V at idle, increasing to about 4.5V at WOT
  - b) 1.0V at idle, decreasing to 0V at WOT
  - c) 3.5V at idle and 2.5V at WOT
  - d) 2.0V across the range
8. The Transmission Fluid Temperature (TFT) sensor provides input to the PCM. If the transmission fluid is very cold, the PCM may:
- a) Delay shifts and disable the torque converter clutch
  - b) Engage overdrive at lower speeds
  - c) Trigger higher fan speed to warm the fluid
  - d) Reduce engine power to prevent overheating

9. How does the Powertrain Control Module (PCM) use the Throttle Position (TP) sensor in determining shift points for an automatic transmission?

- a) Reduces throttle input if excessive shifting is detected
- b) Activates overdrive when throttle is nearly closed
- c) Maintains default shift points regardless of throttle position
- d) Delays shift points during acceleration for increased power

10. If a throttle position sensor is producing an intermittent or “skewed” signal, this may be due to:

- a) A loose connection at the ground terminal
- b) A short in the MAF sensor circuit
- c) A defective spark plug wire
- d) Low transmission fluid temperature

**Automotive Electrical and Engine Performance 9th Edition**  
**Chapter 31 – Temperature and Throttle Position Sensors**  
**Answer Key Quiz A**

**Correct Answers:**

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