

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

1. What are the primary uses of the Engine Coolant Temperature (ECT) sensor?
  - a. To control ignition timing and reduce spark knock
  - b. To modify air-fuel mixture, ignition timing, and cooling fan operation
  - c. To determine oil pressure and throttle position
  - d. To measure air density for fuel economy
  
2. How does a Negative Temperature Coefficient (NTC) thermistor function?
  - a. Resistance decreases as temperature increases
  - b. Voltage output remains constant across temperatures
  - c. Resistance increases as temperature increases
  - d. Voltage output fluctuates independently of temperature
  
3. What is the main function of a stepped ECT circuit?
  - a. To reduce electrical interference during low-load conditions
  - b. To enable faster response in high-temperature environments
  - c. To limit voltage output to 5V under all conditions
  - d. To improve sensor accuracy by changing resistance based on temperature ranges
  
4. Which sensor provides the Powertrain Control Module (PCM) with air temperature data?
  - a. Cylinder head temperature (CHT) sensor
  - b. Exhaust gas temperature (EGT) sensor
  - c. Intake air temperature (IAT) sensor
  - d. Engine fuel temperature (EFT) sensor

5. How does the IAT sensor affect engine operation?
- a. By modifying the fuel delivery based on intake air temperature
  - b. By controlling ignition coil discharge timing
  - c. By determining coolant flow rate through the radiator
  - d. By measuring exhaust gas density for emissions control
6. What is the purpose of the Transmission Fluid Temperature (TFT) sensor?
- a. To delay shift points and disable the torque converter clutch at low temperatures
  - b. To control engine cooling fan operation during high-speed driving
  - c. To measure torque output during peak engine performance
  - d. To provide backup data for the MAP sensor during transmission operation
7. How does the PCM respond to incorrect throttle position sensor (TPS) input?
- a. By retarding ignition timing to prevent detonation
  - b. By engaging an alternative fuel delivery mode
  - c. By ignoring the sensor signal and entering open-loop mode
  - d. By adjusting fuel delivery and spark timing based on other sensor data
8. Which type of sensor is a throttle position sensor (TPS)?
- a. Piezoelectric sensor
  - b. Magnetic reluctance sensor
  - c. Potentiometer
  - d. Variable frequency oscillator

9. What does a significant difference between IAT and ECT readings indicate during diagnostics?

- a. A faulty mass airflow (MAF) sensor
- b. Possible sensor or wiring damage in either sensor circuit
- c. Incorrect ignition timing
- d. A short circuit in the fuel injection relay

10. What is the normal voltage range for a TPS signal at idle?

- a. Approximately 0.5 volts
- b. Between 2.5 and 3 volts
- c. Around 4.5 volts
- d. Between 0 and 0.1 volts

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**Answer Key Quiz B**

**Correct Answers:**

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