

**Automotive Electrical and Engine Performance 8th Edition**  
**Chapter 17 – MAP and MAF Sensors**  
**Quiz B**

1. What is the primary function of the MAP sensor in a speed density fuel injection system?
  - a. Detect vacuum leaks
  - b. Monitor throttle position
  - c. Regulate idle speed
  - d. Measure engine load and adjust fuel delivery
  
2. What does the term "absolute pressure" mean in the context of MAP sensors?
  - a. Atmospheric pressure minus intake manifold vacuum
  - b. Barometric pressure only
  - c. Vacuum pressure with respect to atmospheric pressure
  - d. Pressure measured with respect to a perfect vacuum
  
3. Which of the following is true about the relationship between engine vacuum and MAP sensor voltage?
  - a. Higher vacuum leads to higher MAP voltage
  - b. Lower vacuum leads to higher MAP voltage
  - c. Manifold vacuum does not affect MAP sensor voltage
  - d. Atmospheric pressure solely determines MAP sensor voltage
  
4. What principle do silicon-diaphragm strain gauge MAP sensors operate on?
  - a. Piezoelectricity
  - b. Capacitive discharge
  - c. Piezoresistivity
  - d. Thermodynamic equilibrium

5. Which of the following conditions can cause a MAP sensor to produce inaccurate readings?
- a. Low intake vacuum
  - b. Damaged vacuum hose
  - c. Incorrect barometric pressure calibration
  - d. All of the above
6. What is the role of the MAF sensor's burn-off circuit?
- a. Measure air density
  - b. Keep the sensor wire clean of contaminants
  - c. Adjust for changes in altitude
  - d. Detect high fuel-air ratios
7. The PCM utilizes MAP sensor data primarily for which function in engines equipped with speed density systems?
- a. Backup for the throttle position sensor
  - b. Detection of air-fuel mixture imbalances
  - c. Calculation of injection pulse width
  - d. Monitoring of manifold air temperature
8. What does a high MAP sensor signal voltage indicate?
- a. High engine vacuum
  - b. High engine load
  - c. Low intake manifold pressure
  - d. Low throttle position
9. Which of the following statements is accurate regarding the testing of MAF sensors?
- a. Sensor voltage at idle should fall within a specific range, typically 2.37–2.52 kHz
  - b. The frequency should decrease as engine speed increases
  - c. Visual inspection is unnecessary if readings are within specifications
  - d. High contamination leads to undervaluation of air density

10. What is "false air" in the context of air measurement sensors?

- a. Air that bypasses the engine's throttle body
- b. Air that is not measured by the airflow sensors
- c. Air entering due to incorrect calibration
- d. All unfiltered air

**Automotive Electrical and Engine Performance 8th Edition**

**Chapter 17 – MAP and MAF Sensors**

**Quiz B**

**Correct Answers:**

1. d

2. a

3. b

4. c

5. d

6. b

7. c

8. b

9. a

10. b