Automotive Electrical and Engine Performance 9th 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

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Correct Answers:

1. d

2. a

3. b

4. c

5. d

6. b

7. c

8. b

9. a

10. b