Automotive Electrical and Engine Performance 9th Edition
Chapter 32 – MAP and MAF Sensors
Multiple Choice Questions Quiz A

1. What is the primary function of the Manifold Absolute Pressure (MAP) sensor in engine management?

a) Measure intake manifold pressure relative to a perfect vacuum

b) Monitor barometric pressure for altitude adjustments

c) Control exhaust gas recirculation

d) Detect engine misfires

2. Which characteristic is typical of a silicon-diaphragm strain gauge MAP sensor?

a) It outputs a DC analog voltage based on pressure changes

b) It uses piezoelectric crystals to measure pressure

c) It operates as a digital on/off switch for vacuum readings

d) It relies on barometric pressure readings exclusively

3. In a turbocharged engine, the MAP sensor must be calibrated for:

a) Atmospheric pressure only

b) Pressures above atmospheric and vacuum

c) Absolute pressure but not vacuum

d) Altitude-specific barometric pressure

4. What is one of the primary uses of the Mass Air Flow (MAF) sensor in a fuel-injection system?

a) To manage exhaust emissions at idle

b) To monitor intake manifold pressure

c) To determine fuel delivery needs based on airflow entering the engine

d) To regulate the throttle position sensor

5. A contaminated MAF sensor often results in which condition?

a) Increased air intake under heavy load

b) Constant rich mixture across all speeds

c) Rich fuel mixture at idle and lean mixture at higher speeds

d) Reduced airflow measurement accuracy only during idle

6. How does a hot-film MAF sensor maintain accuracy in measuring airflow?

a) By using frequency changes to indicate manifold pressure

b) By calculating vacuum differences in the intake manifold

c) By measuring the temperature of intake air directly

d) By heating a conductive film and adjusting for cooling effects of passing air

7. The PCM adjusts for altitude changes primarily through which sensor?

a) MAP sensor, using barometric pressure readings

b) Knock sensor, sensing air density

c) Intake air temperature sensor

d) Exhaust gas recirculation (EGR) sensor

8. If an engine exhibits poor performance that improves when the MAF sensor is disconnected, what is the likely issue?

a) The PCM has an internal fault

b) The MAF sensor is delivering inaccurate data to the PCM

c) The MAP sensor is not calibrated correctly

d) There is an intake manifold vacuum leak

9. The “tap test” is primarily used to diagnose:

a) Loose connections within the MAF sensor

b) MAP sensor response to frequency adjustments

c) Sensor failure or loose connections in the MAF sensor

d) PCM voltage irregularities

10. Air entering the intake system without passing through the MAF sensor is referred to as:

a) False air

b) Barometric leakage

c) Freely measured air

d) Idle bypass air

Automotive Electrical and Engine Performance 9th Edition
Chapter 32 – MAP and MAF Sensors
Answer Key Quiz A

Correct Answers:

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