Automotive Electrical and Engine Performance 9th Edition
Chapter 39 – Turbocharging and Supercharging
Multiple Choice Questions Quiz B

1. What does volumetric efficiency measure in an engine?

a. The ability of the engine to pull in air

b. The temperature of the air–fuel mixture

c. The comparison of the actual air–fuel mixture drawn into the engine to its theoretical maximum capacity

d. The combustion chamber's resistance to heat

2. What is the main advantage of a turbocharger over a supercharger?

a. It uses exhaust heat to drive the turbine, avoiding the consumption of engine power

b. It provides instant boost without lag

c. It requires less frequent maintenance than a supercharger

d. It does not need any form of lubrication

3. Which component is primarily responsible for controlling boost pressure in a turbocharged engine?

a. Bypass valve

b. Wastegate

c. Intercooler

d. Boost solenoid

4. What is the purpose of an intercooler in a forced induction system?

a. To reduce the temperature of compressed air before it enters the engine

b. To lubricate the bearings in a turbocharger

c. To cool exhaust gases before they enter the turbocharger

d. To increase the mass of fuel entering the engine

5. How does a bypass valve function in a supercharged engine?

a. It redirects intake air around the supercharger when boost is not needed

b. It cools the intake air to prevent detonation

c. It limits the exhaust flow to the turbine

d. It ensures the supercharger operates at a constant speed

6. What is a primary cause of turbo lag in a turbocharged engine?

a. The inertia of the exhaust gas and turbine wheel

b. A stuck-closed wastegate

c. Delayed activation of the intercooler

d. Insufficient intake manifold pressure

7. Which of the following is a sign of a failing turbocharger?

a. Excessive oil consumption and blue smoke from the exhaust

b. High intake manifold pressure during idle

c. Instant boost without engine load

d. Unresponsive throttle position sensors

8. How is boost pressure typically measured?

a. In horsepower units (HP)

b. In pounds per square inch (PSI), atmospheres, or bars

c. In cubic centimeters (cc)

d. In revolutions per minute (RPM)

9. Why is it important to regularly replace the oil in turbocharged engines?

a. To avoid coking of the oil in the turbocharger's center housing

b. To maintain proper fuel–air ratios in the engine

c. To ensure the wastegate operates efficiently

d. To prevent clogging in the throttle body

10. What does a blow-off valve do in a turbocharged system?

a. Vents pressurized air when the throttle is closed during boost

b. Increases the airflow through the intake manifold

c. Reduces the turbocharger's rotational speed at low RPM

d. Prevents excessive fuel injection during deceleration

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Answer Key Quiz B

Correct Answers:

1. c

2. a

3. b

4. a

5. a

6. d

7. a

8. b

9. a

10. b