Automotive Technology Advanced Assessment

Automotive Technology · Answer Key · 10 Questions

1. In a four-stroke internal combustion engine, what is the specific valve event where both the intake and exhaust valves are open simultaneously?

A) Valve overlap
B) Scavenging
C) Dwell
D) Blowdown

2. Which component of a lead-acid automotive battery is responsible for the increase in specific gravity as the state of charge increases?

A) Lead peroxide
B) Sulfuric acid
C) Calcium alloy
D) Sponge lead

3. What is the primary function of the stoichiometric ratio in an internal combustion engine's fuel management system?

A) To maximize engine torque output
B) To achieve a balance between fuel and air for complete combustion
C) To reduce the engine's physical thermal expansion
D) To prevent premature ignition of fuel in the intake manifold

4. In a torque converter, what is the specific purpose of the stator?

A) To transfer fluid energy to the output shaft
B) To lock the transmission in gear
C) To redirect fluid returning from the turbine to the impeller
D) To decrease the internal pressure of the transmission fluid

5. What measurement does an automotive multimeter set to 'Duty Cycle' actually quantify?

A) The peak voltage of a signal
B) The frequency of a pulse-width modulated signal
C) The total time a circuit remains open or closed during a cycle
D) The internal resistance of a sensor

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6. Which property of engine oil is primarily responsible for maintaining a protective film between moving metal parts under heavy loads?

A) Viscosity index
B) Flash point
C) Total Base Number
D) Pour point

7. In an Electronic Fuel Injection (EFI) system, what does the Long Term Fuel Trim (LTFT) represent?

A) Immediate adjustments based on O2 sensor feedback
B) Calculated corrections stored over time to compensate for engine wear
C) The voltage sent to the fuel injectors
D) The amount of fuel remaining in the tank

8. What is the purpose of the 'Ackermann steering geometry' in an automotive suspension design?

A) To ensure the inner wheel turns at a sharper angle than the outer wheel during a turn
B) To maintain a constant camber angle during suspension travel
C) To dampen high-frequency vibrations from the road
D) To distribute brake pressure equally to all four wheels

9. Which gear type is characterized by teeth cut at an angle to the axis of the shaft, allowing for quieter operation and higher load capacity?

A) Spur gear
B) Helical gear
C) Worm gear
D) Planetary gear

10. In a disc brake system, what is the primary purpose of the 'residual pressure valve' (in systems where applicable)?

A) To increase the pedal travel distance
B) To prevent air from entering the master cylinder
C) To maintain slight pressure in the lines to prevent cup seal leakage
D) To speed up the cooling of the brake rotor

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