Automotive Electrical and Engine Performance 9th Edition
Chapter 43 – Catalytic Converters
Multiple Choice Questions Quiz A

1. The primary function of a catalytic converter is to:

a) Reduce harmful exhaust emissions by converting them into less harmful gases

b) Increase the engine's power output by optimizing air intake

c) Improve fuel efficiency by controlling air-fuel mixture

d) Regulate exhaust temperature to prevent overheating

2. Technician A states that the catalytic converter relies on rhodium to reduce NOx emissions. Technician B states that platinum and palladium are used to oxidize hydrocarbons and carbon monoxide. Who is correct?

a) Technician A only

b) Technician B only

c) Both Technician A and Technician B

d) Neither Technician A nor B

3. Which term describes the ability of a catalytic converter to store oxygen and release it as needed to support oxidation reactions?

a) Light-off capacity

b) Oxygen storage capacity (OSC)

c) Exhaust gas recirculation

d) Catalyst holding potential

4. What is the "light-off temperature" of a catalytic converter?

a) 250°F (121°C)

b) 500°F (260°C)

c) 800°F (427°C)

d) 1,200°F (649°C)

5. In a three-way catalytic converter, which two substances are primarily targeted in the reduction section?

a) HC and CO

b) NOx and O_2

c) NOx and HC

d) CO_2 and H_2O

6. The use of cerium in a catalytic converter helps:

a) Increase fuel economy by reducing combustion requirements

b) Store oxygen to support oxidation during fuel-rich conditions

c) Decrease the converter's heat output to extend its lifespan

d) Eliminate CO emissions entirely in lean mixtures

7. Technician A says a clogged catalytic converter often leads to high back pressure, causing engine power loss. Technician B says a clogged converter will always improve fuel economy. Who is correct?

a) Technician A only

b) Technician B only

c) Both Technician A and Technician B

d) Neither Technician A nor B

8. To test catalytic converter efficiency, an infrared pyrometer measures:

a) Only the inlet temperature of the converter

b) The temperature of exhaust gas at idle

c) The difference between the inlet and outlet temperatures

d) The internal temperature of the converter's washcoat

9. What happens when excessive unburned fuel enters the catalytic converter?

a) It increases the oxygen storage capacity

b) It causes the converter to overheat and potentially fail

c) It improves the efficiency of the reduction section

d) It reduces NOx emissions more effectively

10. A catalytic converter rattles when tapped lightly with a rubber mallet. This typically indicates:

a) The internal substrate is damaged or broken

b) The washcoat has worn out

c) The oxygen storage capacity is low

d) The converter has failed to reach light-off temperature

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Answer Key Quiz A

Correct Answers:

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