

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) What does the Federal BIN number mean?

2) How are oxides of nitrogen (NO_x) formed?

3) What is the stoichiometric ratio and what does it mean?

4) How is water formed during the combustion process?

5) List the five exhaust gases and their maximum allowable readings for a fuel-injected vehicle equipped with a catalytic converter.

Answer Key

Testname: SHORT 84

1) The higher the tier number, the newer the regulation; the lower the bin number, the cleaner the vehicle. The Toyota Prius is a very clean Bin 2, while dirtier vehicles are given a higher bin number.

Page Ref: 984

2) Nitrogen is 78% of the air, so having some left over is normal. However, if the combustion temperatures and pressures are high enough, some of the nitrogen (N₂) combines with the oxygen to form NO and NO₂, which are harmful exhaust gases and referred to as oxides of nitrogen, NO_x, where the "x" represents a number.

Page Ref: 980

3) Engines consume about 15 times more air than gasoline, this ratio of air to fuel is called the stoichiometric ratio. This ratio, which is 14.7:1 for gasoline, is the ratio where all the fuel is consumed in the combustion process and all the available oxygen is used.

Page Ref: 979

4) During combustion, the HC combines with the air to form water (H₂O) and carbon dioxide (CO₂), plus nitrogen (N₂) and some other non-desirable gases.

Page Ref: 979

5) The five gases and their maximum allowable readings include:

HC = 30 to 50 PPM or less

CO = 0.3% to 0.5% or less

O₂ = 0% to 2%

CO₂ = 12% to 15%

NO_x = less than 100 PPM at idle and less than 1000 PPM at WOT

Page Ref: 981