

Name _____

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

1) What is the difference between direct injection and indirect injection?

2) What are the three phases of diesel ignition?

3) What are the two most commonly used types of automotive diesel injection systems?

4) Why are glow plugs kept working after the engine starts?

5) What exhaust after-treatment is needed to achieve exhaust emission standards for vehicles 2007 and newer.

6) What are the advantages and disadvantages of SCR?

Answer Key

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1) A direct injection diesel engine uses an injector that squirts fuel directly into the combustion chamber. An indirect injection diesel engine uses an injector that squirts fuel into a pre-combustion chamber next to the combustion chamber.

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2) The three phases of diesel ignition are:

- a. Ignition delay
- b. Rapid combustion
- c. Controlled combustion

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3) The two most commonly used type of automotive diesel injection system will include the high-pressure common rail and the hydraulic electronic unit injection (HEUI) system.

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4) The glow plugs are kept working to help reduce noise, white exhaust smoke (unburned fuel), and to improve idle quality

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5) Diesel exhaust particulate filter (DPF) is the aftertreatment device needed to meet the 2007+ emissions standards.

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6) The advantages of SCR include:

- a. The potential for higher power output
- b. Reduced NOX emission up to 90%
- c. Reduced HC and CO emissions up to 50%
- d. Reduced particulate matter (PM) by 50%

The disadvantages of SCR include:

- a. On-board storage tank required for the urea (diesel exhaust fluid – DEF)
- b. Difficult to find DEF at times
- c. Increased cost to the vehicle owner due to the cost of refilling the DEF storage tank

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