

Automotive Electrical and Engine Performance 9th Edition
Chapter 12 – Immobilizer and Push Button Start Systems
Quiz A

1. What is the purpose of the security light in a vehicle equipped with an immobilizer system?
 - a. To indicate normal or fault conditions of the immobilizer system
 - b. To confirm the ignition key is transmitting a valid signal
 - c. To illuminate the key cylinder for easier visibility
 - d. To flash continuously if the vehicle battery is weak

2. How does inductive coupling facilitate communication between the key and the immobilizer module?
 - a. By using battery power to create a constant data stream
 - b. By generating magnetic pulses transmitted through the transceiver coil
 - c. By transferring high-frequency signals without a battery in the key
 - d. By establishing a secure Bluetooth connection

3. What component allows the vehicle to detect the key fob even when its battery is dead?
 - a. The key antenna coil embedded in the key
 - b. A mechanical switch in the ignition cylinder
 - c. The passive radio frequency transponder
 - d. The signal amplifier located in the BCM

4. Which part of the immobilizer system directly prevents engine operation in the absence of a valid key?
 - a. The immobilizer module controlling the fuel injection system
 - b. The powertrain control module disabling the starter circuit
 - c. The body control module monitoring key proximity
 - d. The steering column lock mechanism

5. What is a common failure mode in aftermarket remote start systems that interferes with immobilizer functionality?

- a. Weak signal strength due to outdated firmware
- b. Placement of a spare key too close to the lock cylinder
- c. Improper synchronization between remote and immobilizer
- d. Overlapping frequencies with the vehicle's RKE system

6. What does the acronym PATS represent in Ford immobilizer systems?

- a. Passive Antitheft Security
- b. Programmable Anti-Theft System
- c. Passive Antitheft System
- d. Passive Automotive Theft Security

7. How does the security lamp indicate a tamper mode condition?

- a. By flashing rapidly for 2-5 seconds upon ignition
- b. By continuously flashing every second
- c. By remaining illuminated steadily during vehicle operation
- d. By displaying a unique error code on the instrument cluster

8. Which condition is required to program an additional key to a Ford PATS system?

- a. Two previously programmed keys
- b. A master key programmed by the manufacturer
- c. A factory-level scan tool to reset the immobilizer
- d. A special RFID programmer tool

9. Why is it important to retrieve immobilizer-related DTCs from body or chassis modules during diagnostics?

- a. Engine-related “P” codes are insufficient for immobilizer issues
- b. Immobilizer faults often involve communication-related “U” codes
- c. Security faults are recorded under “C” chassis-related codes
- d. Both a and b

10. When replacing an immobilizer module, what step is typically required to restore functionality?

- a. Replacing the key fob and reprogramming the immobilizer simultaneously
- b. Synchronizing the immobilizer with the PCM using a factory tool
- c. Resetting the module to factory settings before programming keys
- d. Testing the immobilizer coil using a dedicated diagnostic device

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Correct Answers:

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