

310T Engine and Supporting Systems Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	15

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 - 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. What should be done before removing an injection nozzle for testing or repair?**
 - A. Check the injection pump timing**
 - B. Change the primary fuel filter**
 - C. Clean the area around the injector thoroughly**
 - D. Bend the injection line slightly for clearance**

- 2. Which statement best describes the correct cylinder boring and honing procedure for an engine rebuild?**
 - A. Bore to new piston size plus clearance**
 - B. Bore to new piston skirt diameter**
 - C. Hone to new piston size and bore to clearance specifications**
 - D. Bore to specified size and hone to the clearance specification**

- 3. A compression test was performed on an engine and lower than specified compression was measured in one cylinder. What would be the likely cause?**
 - A. Worn piston rings**
 - B. A worn or burnt valve**
 - C. A faulty fuel injector**
 - D. Leaking liner O-rings**

- 4. In SAE fault codes, the second numeric position identifies what?**
 - A. Number of fault occurrences**
 - B. Type of sensor circuit**
 - C. Message identification**
 - D. Type of circuit failure**

- 5. What is the maximum inlet restriction permitted on a diesel engine air filter?**
 - A. 25" H₂O**
 - B. 5" H₂O**
 - C. 50" H₂O**
 - D. 10" H₂O**

- 6. What should be done when the depth of a cylinder block liner counterbore varies 0.003 inches in four places?**
- A. Machine and shim the counterbore**
 - B. Install a tapered shim to even out liner height**
 - C. Nothing - measurements are acceptable**
 - D. Hone the block for an oversized liner**
- 7. Which component is most closely associated with reducing engine vibration in a typical engine assembly?**
- A. Damaged vibration dampener**
 - B. Spark plug**
 - C. Oxygen sensor**
 - D. Fuel pump**
- 8. If air leaks from the oil fill port during a cylinder leakage test, which fault is most likely?**
- A. Worn piston rings**
 - B. A burnt exhaust valve**
 - C. A burnt intake valve**
 - D. Cylinder liner cavitation**
- 9. What would create a milky white appearance of the engine oil?**
- A. Fuel**
 - B. Coolant**
 - C. Oil additive depletion**
 - D. Dirt in the oil**
- 10. Which issue is most likely to cause blue exhaust smoke?**
- A. Worn piston rings**
 - B. Restriction in the air inlet**
 - C. Coolant ingestion in a cylinder**
 - D. Cold operating temperatures**

Answers

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1. C
2. D
3. B
4. D
5. A
6. A
7. A
8. A
9. B
10. A

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Explanations

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1. What should be done before removing an injection nozzle for testing or repair?

- A. Check the injection pump timing**
- B. Change the primary fuel filter**
- C. Clean the area around the injector thoroughly**
- D. Bend the injection line slightly for clearance**

Keeping the area around the injector clean is essential before removing the nozzle. Fuel injectors have tiny passages and precise openings, so any dirt or dust can be carried into the nozzle or fuel rail during disassembly, causing poor spray, clogging, or sticking after reassembly. A thorough cleaning of the surrounding area helps prevent contamination and makes reassembly safer. The other options aren't preparatory steps for nozzle removal: checking pump timing isn't required just to take the nozzle out, changing the primary fuel filter is a separate maintenance task, and bending the injection line for clearance can damage fittings and cause leaks. Cleanliness is the right precaution.

2. Which statement best describes the correct cylinder boring and honing procedure for an engine rebuild?

- A. Bore to new piston size plus clearance**
- B. Bore to new piston skirt diameter**
- C. Hone to new piston size and bore to clearance specifications**
- D. Bore to specified size and hone to the clearance specification**

The key idea is to set the cylinder bore to the precise finished size required for the piston you're using, and then finish it with honing to reach the exact piston-to-wall clearance specified by the piston and ring manufacturer. Boring creates the basic cylindrical size and true, round shape, while honing adds the final small-scale surface texture and final diameter to meet tolerance. This sequence ensures the rings can seat properly and seal, while allowing for proper oil control and combustion chamber performance. Boring to the piston skirt diameter or to the piston size plus clearance would not give the correct finished diameter or the correct clearance range, and honing to a piston size rather than to the required clearance wouldn't produce the proper wall-to-piston gap. The right approach is to bore to the specified bore size first and then hone to the clearance specification.

3. A compression test was performed on an engine and lower than specified compression was measured in one cylinder. What would be the likely cause?

- A. Worn piston rings**
- B. A worn or burnt valve**
- C. A faulty fuel injector**
- D. Leaking liner O-rings**

A compression test measures how well a cylinder can build pressure during the compression stroke, which depends on the seals inside the combustion chamber. If the reading in one cylinder is lower than specification, it points to a leakage path that prevents the chamber from trapping the air-fuel charge. A worn or burnt valve is the most likely cause for a single-cylinder drop because the valve may not seal fully when it closes. If the intake or exhaust valve isn't sealing, air can escape past the valve during compression, preventing the cylinder from reaching normal pressure. A valve that's been overheated or is seating badly leaves a persistent leak, which shows up as a low compression reading specifically in that cylinder. Piston rings, by contrast, tend to affect compression more broadly. Worn rings often cause blow-by and lower compression that can show up across multiple cylinders, plus symptoms like increased oil consumption and visible crankcase pressure. A faulty fuel injector affects how the engine runs and fuel delivery but doesn't directly reduce the cylinder's static compression pressure. Leaking liner O-rings could cause leakage, but they're less commonly the single-cylinder cause for a low compression test and usually accompany other signs like coolant or oil leaks. If you want to differentiate between a valve and rings, you can perform a wet compression test. Adding a small amount of oil into the cylinder and repeating the test—if the pressure rises significantly, rings are the culprit; if it doesn't, the valve likely isn't sealing properly.

4. In SAE fault codes, the second numeric position identifies what?

- A. Number of fault occurrences**
- B. Type of sensor circuit**
- C. Message identification**
- D. Type of circuit failure**

In SAE fault codes, the characters are organized to quickly convey where and what the problem is. The second numeric position is the part that tells you the kind of circuit fault involved. That digit classifies the nature of the electrical issue in the circuit—things like a wiring/open circuit condition, a short to voltage, a short to ground, or another circuit integrity problem. The remaining digits identify the specific subsystem and the exact fault condition within that circuit. So, the second numeric position is all about the type of circuit failure, not how many times it occurred, nor the particular sensor, nor a message ID.

5. What is the maximum inlet restriction permitted on a diesel engine air filter?

- A. 25" H2O**
- B. 5" H2O**
- C. 50" H2O**
- D. 10" H2O**

Airflow must be sufficient for the engine to run well, so there's a maximum allowable pressure drop across the air filter. This restriction is measured in inches of water (in H2O). When the filter gets dirty, the drop increases; once it reaches the specified limit, airflow is too restricted and performance suffers, so the filter should be serviced or replaced. For many diesel engines, the standard maximum is about 25 inches of water. The other values would indicate too little or too much restriction for normal operation, so they're not used as the limit. Therefore, the maximum permissible inlet restriction is 25" H2O.

6. What should be done when the depth of a cylinder block liner counterbore varies 0.003 inches in four places?

- A. Machine and shim the counterbore**
- B. Install a tapered shim to even out liner height**
- C. Nothing - measurements are acceptable**
- D. Hone the block for an oversized liner**

Uniform liner seating depth is essential for a proper seal and correct deck height. When the counterbore depth varies across multiple places, the liner won't sit flush and the top of the liner can be uneven relative to the block deck, which can lead to head gasket leaks, distortion, or improper bore alignment. If you see a difference of 0.003 inches in several spots, you must bring all areas to a single, spec'd depth. This is done by machining the counterbore to a uniform depth and then using shims as needed to set the liner height precisely against the block. Trying to compensate with a tapered shim would create uneven seating and loading, and wouldn't reliably restore a true, flat seating surface. Nothing should be left out of tolerance, and modifying the bore diameter with a hone won't address the depth issue.

7. Which component is most closely associated with reducing engine vibration in a typical engine assembly?

- A. Damaged vibration dampener**
- B. Spark plug**
- C. Oxygen sensor**
- D. Fuel pump**

A vibration dampener is designed to absorb crankshaft torsional vibrations, smoothing the engine's rotation and reducing transmitted vibrations to the rest of the system. It sits at the crankshaft pulley and uses a rubber or fluid element to dampen the energy from each combustion event, which lowers noise and wear. The spark plug ignites the air-fuel mix, the oxygen sensor monitors exhaust for fuel-air adjustments, and the fuel pump just delivers fuel—none of these directly reduce engine vibration. Because damping those vibrations is exactly what a vibration dampener does, it's the component most closely associated with reducing engine vibration. If the dampener is damaged, its ability to dampen is compromised, leading to louder operation, more vibration, and potential wear.

8. If air leaks from the oil fill port during a cylinder leakage test, which fault is most likely?

- A. Worn piston rings**
- B. A burnt exhaust valve**
- C. A burnt intake valve**
- D. Cylinder liner cavitation**

During a cylinder leakage test, you pressurize the cylinder with air and observe where it escapes. If air comes out of the oil fill port, the leak path from the combustion chamber to the crankcase is open. The most likely cause is worn piston rings—the rings no longer seal properly against the bore, so pressurized air bypasses the piston rings and flows into the crankcase, then out through the oil filler breather route. Air would not escape through the oil fill port predominantly due to a burnt exhaust valve, which would vent to the exhaust system, or a burnt intake valve, which would vent to the intake manifold. Liner cavitation isn't a primary path for air to reach the crankcase in a leakage test. So worn piston rings best explain air exiting at the oil fill port.

9. What would create a milky white appearance of the engine oil?

- A. Fuel**
- B. Coolant**
- C. Oil additive depletion**
- D. Dirt in the oil**

Milky white engine oil means coolant has entered the oil, forming an emulsion. When coolant mixes with the oil, the water content creates a creamy, opaque appearance instead of the normal amber color. This signals a leak path between the cooling system and the lubrication system, most commonly a blown head gasket, a cracked head, or a faulty oil cooler that allows coolant to mix with the oil. This intrusion drastically reduces lubrication quality and can cause serious engine damage if not fixed. The other possibilities don't fit this milky look. Fuel in oil would thin the oil and may lighten or scent it, but it wouldn't produce a creamy, milky opacity. Dirt or contamination tends to make the oil look dirty or sludge-like, not milky. Oil additive depletion changes viscosity or color in other ways, but not to a milky emulsion.

10. Which issue is most likely to cause blue exhaust smoke?

- A. Worn piston rings**
- B. Restriction in the air inlet**
- C. Coolant ingestion in a cylinder**
- D. Cold operating temperatures**

Blue exhaust smoke means oil is burning in the cylinder. When oil slips past worn piston rings, it enters the combustion chamber where it mixes with the air-fuel mixture and burns, producing blue-tinted exhaust. Worn piston rings are the classic cause because they no longer seal oil from entering the cylinder. The other scenarios don't create blue smoke: a restriction in the air inlet changes airflow and tends to affect fuel mixture without burning oil; coolant entering the cylinder burns as white steam; cold operating temperatures mainly show condensation smoke, not oil burning. So worn piston rings best explain blue exhaust smoke.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://310enginesupportingsys.examzify.com>

We wish you the very best on your exam journey. You've got this!

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