310T Engine and Supporting Systems Practice Exam (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

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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

1. Which will cause a diesel engine to have low power output?

A. Cracked intercooler.

B. Excessive turbocharger speed.

C. Leaking turbocharger exhaust outlet.

D. Turbocharger waste-gate valve stuck closed.

2. In the reduction stage of a three-way catalytic converter, what is the product of NOx after the reaction?

A. Converts hydrocarbons to water

B. Oxidizes carbon monoxide to carbon dioxide

C. Reduces NOx to nitrogen and oxygen

D. Filters particulates

3. What is the preferred method of running in a rebuilt engine?

A. Perform a dynamometer test run

B. Road test with service brakes applied

C. Test driving the truck with a trailer attached but empty

D. Test driving the truck fully loaded

4. During cylinder head machining how should a valve seat that is measured wider than specifications be repaired?

A. Throating, then a top grind on the seat

B. Fresh grind of the original seat

C. Grind 2 degrees less then specification

D. Grind 2 degrees greater then specification

5. How can main bearing bore misalignments be corrected?

A. Line boring

B. Replacing main bearings

C. Replacing the main bearing caps

D. Replacing the crankshaft

6. A driver complains that an engine brake is not working; what is the most likely cause?

A. ECM is faulty

B. Accelerator is depressed

C. Faulty 3 way switch

D. Brake is applied

7. 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

8. Excessive engine vibration is most likely caused by which issue?

A. Damaged vibration dampener

B. Excessive fuel injection

C. Poor fuel injection

D. Bad transmission bearing

9. A gasoline fueled engine with a new fuel filter shut down due to what appears to be fuel starvation. After a short shut down period, the engine restarts only to shut down again after a short period of operation. What component should we check first?

A. Fuel rail

B. Fuel pressure regulator

C. Fuel tank cap

D. Fuel pump

10. In a common rail system, if a nozzle valve sticks open, which device most directly limits the cylinder's fuel delivery?

A. Rail pressure sensor

B. Flow limiter valve

C. Rail pressure regulator valve

D. Unintended fuel sensor

Answers

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

Explanations

1. Which will cause a diesel engine to have low power output?

A. Cracked intercooler.

B. Excessive turbocharger speed.

C. Leaking turbocharger exhaust outlet.

D. Turbocharger waste-gate valve stuck closed.

Air density in the intake is what mainly controls power in a turbocharged diesel. The intercooler cools the compressed air from the turbo so it becomes denser before it enters the cylinders. If the intercooler is cracked, charged air can leak away or fail to cool effectively, so the air reaching the engine is hotter and less dense. Even with the turbo spinning, you end up delivering less oxygen per stroke, which reduces combustion efficiency and power. Other issues like a leak in the exhaust outlet or a wastegate stuck closed can affect boost as well, but a cracked intercooler most directly lowers the density of the charge air, making it the best explanation for low power in this scenario.

2. In the reduction stage of a three-way catalytic converter, what is the product of NOx after the reaction?

A. Converts hydrocarbons to water

B. Oxidizes carbon monoxide to carbon dioxide

C. Reduces NOx to nitrogen and oxygen

D. Filters particulates

In the reduction stage of a three-way catalytic converter, NOx is chemically reduced by the reducing agents in exhaust (like CO and hydrocarbons). This process breaks the nitrogen-oxygen bonds and turns NOx into nitrogen gas, with the accompanying oxygen being tied up in oxidizing CO and hydrocarbons to CO_2 and H_2O elsewhere on the catalyst. So the product of NOx after the reaction is nitrogen and oxygen. The other options describe oxidation of hydrocarbons or carbon monoxide, or particulate filtration, which aren't the direct products of NOx reduction.

3. What is the preferred method of running in a rebuilt engine?

A. Perform a dynamometer test run

B. Road test with service brakes applied

C. Test driving the truck with a trailer attached but empty

D. Test driving the truck fully loaded

When a rebuilt engine is first operated, the goal is to seat the piston rings and bearings under controlled conditions while you monitor oil pressure, temperatures, and overall behavior. A dynamometer test run is the preferred method because it provides a controlled, repeatable load and steady engine speed, allowing you to apply torque gradually and observe how the engine performs without the variability and risks of real-road conditions. This controlled environment helps ensure proper lubrication, correct ring seating, and early detection of any abnormal wear or oil flow issues before the engine faces the unpredictable stresses of road driving. Road testing with brakes applied, or towing a trailer (empty or loaded), introduces varying loads, handling, and braking heat that can mask problems and make the break-in process less reliable and potentially unsafe. After a successful controlled dyno run, a subsequent, careful road test can confirm real-world behavior, but the initial run on the dynamometer is the best approach for a rebuilt engine break-in.

4. During cylinder head machining how should a valve seat that is measured wider than specifications be repaired?

A. Throating, then a top grind on the seat

B. Fresh grind of the original seat

C. Grind 2 degrees less then specification

D. Grind 2 degrees greater then specification

When a valve seat is wider than spec, the aim is to restore the correct seat width without upsetting the seat's geometry or alignment. The proper approach is to narrow the seat first and then finish the surface. Throating removes material from the inner portion of the seat, effectively reducing the overall width while preserving the outer edge and the seat's angle. This step corrects the excess width without changing how the seat contacts the valve face. After the seat has been narrowed, a top grind finishes the upper seating surface. This ensures the seat is square and true to the valve face, providing a proper, uniform sealing surface and the correct overall height. Doing only a top grind or trying to change the seat angle would either fail to address the width properly or disrupt the valve's sealing geometry, leading to poor seating or misalignment. So, narrowing with throating first, then finishing with a top grind, is the correct sequence to repair an oversized valve seat.

5. How can main bearing bore misalignments be corrected?

A. Line boring

B. Replacing main bearings

C. Replacing the main bearing caps

D. Replacing the crankshaft

When main bearing bore misalignment occurs, the fix is to true the bores so they are straight and coaxial with the crankshaft axis. Line boring does this by machining all the main bearing bores in the block to the correct size and alignment in one setup. It removes material to correct any out-of-roundness or eccentricity and ensures the crankshaft spins true with even oil clearance across all mains. Replacing the bearings or the main bearing caps won't correct the bore geometry; they may fit better, but the misaligned bores will still cause uneven clearances and wear. Replacing the crankshaft doesn't fix the bore alignment either unless the bores are first brought back into true alignment, which is accomplished by line boring.

6. A driver complains that an engine brake is not working; what is the most likely cause?

A. ECM is faulty

B. Accelerator is depressed

C. Faulty 3 way switch

D. Brake is applied

Engine brake activation depends on a control signal from a switch that tells the engine management system to engage the compression-release action at the right RPM. If that three-way switch, which selects engine brake on, off, or auto, is faulty, the ECM never gets the command to engage the engine brake. So even with the system ready and the RPM in range, the engine brake won't come in. Other possibilities are less likely single causes. A faulty ECM would typically show broader engine-control symptoms beyond just the engine brake. The accelerator being depressed doesn't directly enable the engine brake and can even suppress it in some setups. And having the service brake applied intentionally disables the engine brake, but when the brakes are not applied and the system is functioning, a good switch should still allow engagement.

7. 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.

8. Excessive engine vibration is most likely caused by which issue?

A. Damaged vibration dampener

B. Excessive fuel injection

C. Poor fuel injection

D. Bad transmission bearing

Excessive engine vibration is usually linked to how the engine's crankshaft torsional vibrations are managed. The vibration dampener, or harmonic balancer, sits on the crankshaft and uses a damping material to absorb the rapid torque pulses every time a cylinder fires. When this dampener is damaged—cracked, delaminated, or loose—it loses its ability to absorb those vibrations. The crankshaft then transfers more of its inherent vibrations to the engine block and mounts, which you feel as noticeable engine vibration. Other issues can cause rough running, misfires, or drivetrain noises, but they don't typically produce the sustained, engine-origin vibration pattern that a damaged dampener does. A bad transmission bearing, for example, would usually manifest as drivetrain vibrations transmitted through the vehicle, not as the engine itself vibrating.

9. A gasoline fueled engine with a new fuel filter shut down due to what appears to be fuel starvation. After a short shut down period, the engine restarts only to shut down again after a short period of operation. What component should we check first?

A. Fuel rail

B. Fuel pressure regulator

C. Fuel tank cap

D. Fuel pump

Fuel delivery depends on the tank being able to vent air as fuel is drawn toward the engine. If the fuel tank cap is faulty and won't vent, a vacuum can form inside the tank as fuel is pumped out. That vacuum reduces the pump's ability to pull fuel, leading to a momentary starvation and the engine shutting down. After a short rest, the pressure equalizes and the engine can restart briefly, only to starve again as the vacuum builds anew. That's why the first thing to check is the fuel tank cap and its venting. test by loosening or removing the cap (or replacing it with a known-good cap) to see if the problem clears. If venting isn't the issue, then proceed to inspect the fuel pump, fuel pressure regulator, and related fuel delivery components.

10. In a common rail system, if a nozzle valve sticks open, which device most directly limits the cylinder's fuel delivery?

A. Rail pressure sensor

B. Flow limiter valve

C. Rail pressure regulator valve

D. Unintended fuel sensor

In a common rail system, the amount of fuel a cylinder actually receives is limited not just by rail pressure or how long the injector is energized, but by a flow control device that caps how much fuel can pass to the injector. When a nozzle valve sticks open, fuel would tend to flow continuously, but the flow limiter valve acts as the final gate that restricts that flow. It sets a maximum delivery per cycle, preventing an injector fault from delivering unlimited fuel to the cylinder. The rail pressure sensor merely monitors pressure, and the rail pressure regulator valve controls rail pressure rather than per-cycle flow to a particular injector. An unintended fuel sensor isn't a standard component used to regulate delivery.

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://310tenginesupportingsys.examzify.com

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