AGR 170 AGRICULTURAL TECHNOLOGY – SMALL ENGINE MECHANICS PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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.

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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!

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Questions

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1. Name the two main ignition system configurations found on small engines and a basic method to test for spark.

A. Battery/coil (electrical) and magneto; check spark by grounding a spark plug with the thread removed or using a spark tester while cranking.

B. Spark plug only; test by grounding a plug on the engine block.

C. Magneto and distributor; test with a timing light while cranking.

D. Electronic fuel injection; test with a multimeter.

2. Diesel compression ratio range according to the material?

A. 6:1-8:1

B. 12:1-16:1

C. 16:1-24:1

D. 8:1-12:1

3. Gasoline should be used within how many days to ensure freshness for small engines?

A. 7 days

B. 14 days

C. 30 days

D. 60 days

4. What is the proper reason to re-check idle and main adjustments after driving the engine?

A. Not necessary; especially if it starts well.

B. To ensure adjustments remain correct under load and temperature; re-check ensures stability.

C. Only for brand-new engines.

D. Re-check annually regardless.

5. What is the primary purpose of performing a compression test on a small engine?

A. To verify compression is within specification.

B. To measure fuel pressure.

C. To check carburetor idle.

D. To diagnose ignition coil resistance.

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6. Most lawn mowers require an oil change after how many hours of operation?

A. 5 hours

B. 10 hours

C. 50 hours

D. 25 hours

7. Diesel compression ratio is measured by which property?

A. Octane

B. Cetane

C. Fuel efficiency

D. Volumetric efficiency

8. In float height setting, measuring against a specified reference ensures what?

A. Correct fuel level in the carburetor bowl.

B. Correct ignition timing.

C. Correct exhaust backpressure.

D. Correct air cleaner position.

9. Where does the combustion take place (the piston is housed)?

A. Cylinder Head

B. Crankcase

C. Engine Cylinder

D. Piston

10. What is involved in a basic engine rebuild evaluation?

A. Inspect crankcase ventilation hoses for cracks.

B. Check only compression and oil color.

C. Inspect exhaust manifold for cracks.

D. Inspect cylinder bore, piston and rings; measure ring end gaps; inspect valve seats and valve guides; check valve lash; evaluate head gasket and overall wear; confirm torque specs.

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Answers

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

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Explanations

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1. Name the two main ignition system configurations found on small engines and a basic method to test for spark.

A. Battery/coil (electrical) and magneto; check spark by grounding a spark plug with the thread removed or using a spark tester while cranking.

B. Spark plug only; test by grounding a plug on the engine block.

C. Magneto and distributor; test with a timing light while cranking.

D. Electronic fuel injection; test with a multimeter.

Two main ignition configurations on small engines are battery/coil ignition and magneto ignition. In a battery/coil setup, a 12-volt battery powers a coil to create a high-voltage spark at the spark plug when it's timed to fire. In a magneto setup, the spark is produced directly by a magneto coil driven by the engine's moving parts, so no external battery is needed. A basic way to test for spark on either type is to remove or loosen the spark plug boot and ground the spark plug's metal end to the engine block, or use a spark tester connected to the plug wire, then crank the engine. You should see a bright blue spark across the gap; a weak or no spark points to an ignition issue such as coil, magneto, wiring, or plug condition. The other options don't fit because they either describe only one component, invoke a distributor (not common on small engines), or refer to testing methods tied to fueling or timing rather than a straightforward spark check.

2. Diesel compression ratio range according to the material?

A. 6:1-8:1

B. 12:1-16:1

C. 16:1-24:1

D. 8:1-12:1

Diesel engines rely on compression ignition, so they must generate a hot, high-pressure air charge to ignite injected fuel. That requires a much higher compression ratio than spark-ignition engines. In practice, diesels operate with compression ratios roughly in the mid-teens to mid-twenties, commonly between 16:1 and 24:1. This range provides enough temperature rise from compression to reliably ignite diesel fuel while staying within mechanical limits, and that's why the material lists 16:1 to 24:1 as the typical diesel compression ratio range. Ranges like 6:1–8:1 or 8:1–12:1 are characteristic of gasoline engines, which use spark timing rather than compression ignition and therefore don't reach the high pressures and temperatures diesels require. A range around 12:1–16:1 might be seen in some engines, but it isn't the standard diesel range given in the material.

3. Gasoline should be used within how many days to ensure freshness for small engines?

A. 7 days

B. 14 days

C. 30 days

D. 60 days

Gasoline freshness declines quickly, and for small engines it runs best when the fuel is about thirty days old or newer. Over time lighter components evaporate and the fuel can form gums and varnish that clog carburetors and fuel passages, leading to hard starting and rough running. Ethanol-blended fuels can also absorb moisture, causing phase separation and corrosion in the fuel system. To keep fuel usable longer, you can add a fuel stabilizer if you need to store it a bit longer, or drain and refill with fresh fuel before storage. If you must store fuel, keep it in a sealed container in a cool place to minimize degradation.

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4. What is the proper reason to re-check idle and main adjustments after driving the engine?

A. Not necessary; especially if it starts well.

B. To ensure adjustments remain correct under load and temperature; re-check ensures stability.

C. Only for brand-new engines.

D. Re-check annually regardless.

Re-checking idle and main adjustments after driving is about validating how the engine behaves under real operating conditions. When the engine warms up and starts taking on load, things change: metal expands, parts seat differently, air density shifts, and fuel vaporization changes. These factors can shift the ideal fuel mixture and timing enough that what felt right when cold or at idle doesn't hold once the engine is hot and loaded. By rechecking, you verify that the idle speed and mixture stay smooth and stable, and that the main circuit delivers the right fuel under acceleration and load. This helps prevent symptoms like rough idle, hesitation, bog, or running rich/lean after the engine reaches operating temperature. It's about making sure the adjustments you set are still correct when the engine is actually working in its everyday state. Not necessary to rely on a cold-start or unloaded condition alone, and it's not something you do only once a year or only for brand-new engines—it's a practical check after testing the engine in real use to ensure consistent performance.

5. What is the primary purpose of performing a compression test on a small engine?

A. To verify compression is within specification.

B. To measure fuel pressure.

C. To check carburetor idle.

D. To diagnose ignition coil resistance.

The main idea is to determine whether the engine cylinders are sealing properly and developing the expected pressure. A compression test reads the actual cylinder pressure by cranking the engine with the spark plug removed and the throttle opened, using a compression gauge. When the reading matches the manufacturer's specification, the cylinder is healthy and compression loss isn't the cause of performance problems. If the pressure is low, it points to mechanical issues like worn piston rings, burnt valves, or a leak such as a head gasket, which reduces the engine's ability to produce power. This test specifically isolates the engine's compression from fuel delivery and ignition, which is why it's the best way to verify compression is within specification. Fuel pressure measurement, checking carburetor idle, or diagnosing ignition coil resistance address other systems and won't directly confirm the cylinder's sealing condition.

6. Most lawn mowers require an oil change after how many hours of operation?

A. 5 hours

B. 10 hours

C. 50 hours

D. 25 hours

Changing the oil at regular intervals keeps the engine properly lubricated and protects moving parts from wear. For most lawn mower engines, the typical interval after the initial break-in period is about 25 hours of operation. This timing balances removing oil that has degraded and collected dirt or fuel byproducts with not having to perform maintenance too often. Many manufacturers also call for a first oil change after a short break-in period (often around 5 hours) to clear out any debris, then returning to a 25-hour schedule. Always check the specific manual for your model, but 25 hours is the common target for most mower engines.

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7. Diesel compression ratio is measured by which property?

A. Octane

B. Cetane

C. Fuel efficiency

D. Volumetric efficiency

Diesel engines rely on compression ignition, so the important property is how readily the fuel will ignite under high compression. That ignition quality is measured by the cetane rating. A higher cetane number means the fuel fires sooner after injection, which helps smooth and efficient diesel combustion. Octane measures a gasoline fuel's resistance to premature ignition in spark-ignition engines, not how a diesel fuel behaves under compression. Fuel efficiency and volumetric efficiency are engine performance metrics, not fuel properties used to gauge ignition under compression. So cetane best describes the diesel fuel's ignition characteristics under compression.

8. In float height setting, measuring against a specified reference ensures what?

A. Correct fuel level in the carburetor bowl.

B. Correct ignition timing.

C. Correct exhaust backpressure.

D. Correct air cleaner position.

Float height setting controls the fuel level in the carburetor bowl. By measuring the float against a specified reference, you ensure the bowl fills to the exact level the design requires. That precise level makes the fuel metered through the jets consistent as the engine runs. If the float height is off, the bowl can hold too much fuel (leading to a rich mixture, flooding, hard starting) or too little (lean condition, rough idle, stalling). The reference gives a repeatable, correct setting regardless of gasket thickness or wear. Ignition timing, exhaust backpressure, and air cleaner position aren't determined by this measurement.

9. Where does the combustion take place (the piston is housed)?

A. Cylinder Head

B. Crankcase

C. Engine Cylinder

D. Piston

Combustion happens inside the confined space where the piston moves—the engine cylinder. The piston creates and changes the volume of the combustion chamber, with the cylinder head forming the top boundary and housing components like valves and the spark plug or injector. When ignition occurs, the high-pressure gases burn and expand in that space, pushing the piston and transferring power to the crankshaft. The crankcase is just where the crankshaft and oil live, not where burning occurs, and the piston itself is the moving boundary, not the place where combustion takes place. So the combustion takes place in the engine cylinder.

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10. What is involved in a basic engine rebuild evaluation?

A. Inspect crankcase ventilation hoses for cracks.

B. Check only compression and oil color.

C. Inspect exhaust manifold for cracks.

D. Inspect cylinder bore, piston and rings; measure ring end gaps; inspect valve seats and valve guides; check valve lash; evaluate head gasket and overall wear; confirm torque specs.

In a basic engine rebuild evaluation, you're looking for wear and condition that affect compression, sealing, and long-term reliability. The process covers the major high-wear areas: inspecting the cylinder bore, piston and rings for wear or scoring; measuring ring end gaps to ensure proper sealing and oil control; inspecting valve seats and valve guides for damage or wear; checking valve lash to confirm correct clearance and timing effects; evaluating the head gasket and overall top-end wear; and confirming torque specs to ensure correct clamping and prevent distortion. This full set of checks shows what parts may need replacement or machining and helps decide what the rebuild will require. Narrow checks like only looking at compression or oil color, or focusing solely on hoses or the exhaust manifold, can miss critical wear that impacts performance and longevity.

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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:

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

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