

Aviation Machinist Mate (AD) Week 1 Practice Test (Sample)

Study Guide



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

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- 1. The compressor rotor assembly consists of which components?**
 - A. Compressor blades, the compressor shaft, and the compressor disk**
 - B. Only compressor blades**
 - C. Only the compressor shaft**
 - D. Only the compressor disk**

- 2. What is the purpose of ignitor plugs?**
 - A. Provides air gap for high energy spark to ignite fuel/air mixture**
 - B. Controls fuel flow to the nozzles**
 - C. Measures combustion chamber pressure**
 - D. Cools the turbine blades**

- 3. In the accessory section, where are gearboxes normally located?**
 - A. Near the top of the compressor**
 - B. Near the bottom of the compressor**
 - C. Inside the combustion chamber**
 - D. At the tailpipe**

- 4. In the accessory section, where is the Power Take-Off (PTO) located?**
 - A. Front of compressor bulb**
 - B. Rear of turbine**
 - C. Inside the combustion chamber**
 - D. On the exhaust manifold**

- 5. The turbine rotor disk functions mainly as which entity?**
 - A. Provides mounting surface for turbine blades**
 - B. Houses the exhaust nozzle**
 - C. Directs fuel spray into the combustion chamber**
 - D. Serves as the intake plenum**

- 6. Which heat transfer method can occur in a vacuum?**
- A. Radiation**
 - B. Conduction**
 - C. Convection**
 - D. Evaporation**
- 7. Standard atmospheric pressure in PSI?**
- A. 14.7 PSI**
 - B. 101.3 PSI**
 - C. 7.5 PSI**
 - D. 0.5 PSI**
- 8. Barometric pressure at standard conditions is measured as which of the following?**
- A. 30.00 inches of mercury or 15.0 PSI**
 - B. 29.92 inches of mercury or 14.7 PSI**
 - C. 28.50 inches of mercury or 13.5 PSI**
 - D. 31.00 inches of mercury or 16.0 PSI**
- 9. According to Newton's second law, acceleration is inversely proportional to the object's what?**
- A. Mass**
 - B. Speed**
 - C. Time**
 - D. Radius**
- 10. Which unit is used on the barometric scale to express standard atmospheric pressure?**
- A. Inches of mercury**
 - B. PSI**
 - C. Pascal**
 - D. Newton per square meter**

Answers

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

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Explanations

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1. The compressor rotor assembly consists of which components?

A. Compressor blades, the compressor shaft, and the compressor disk

B. Only compressor blades

C. Only the compressor shaft

D. Only the compressor disk

The compressor rotor assembly is the rotating part of the compressor and is made up of three essential pieces working as a unit: the compressor blades, the compressor disk (rotor wheel), and the compressor shaft. The blades are the elements that impart energy to the incoming air and create compression. They are mounted to the rotor disk, which provides the structural hub that holds the blades in their exact positions and spacing. The disk is then connected to the shaft, which transmits the engine's torque to the rotor, causing the whole assembly to spin. Together, these parts form a single rotating assembly, with the blades attached to the disk and the disk mounted on the shaft so rotation drives compression. If any one part were missing, the rotor could not function properly: blades alone lack a mounting base, a disk without a shaft cannot be driven, and a shaft without blades and disk cannot perform compression.

2. What is the purpose of ignitor plugs?

A. Provides air gap for high energy spark to ignite fuel/air mixture

B. Controls fuel flow to the nozzles

C. Measures combustion chamber pressure

D. Cools the turbine blades

Ignition systems must provide a reliable spark to start combustion in the burner. The ignitor plug serves that function by creating the air gap through which a high-energy spark jumps, delivering the energy needed to ignite the fuel-air mixture in the combustion chamber. It receives timed pulses from an ignition exciter and must withstand the harsh burner environment during start and relight. This plug isn't involved in metering fuel, measuring pressure, or cooling the blades—the roles of fuel control, sensors, and cooling systems. So, its purpose is to provide the air gap for a high-energy spark to ignite the fuel/air mixture.

3. In the accessory section, where are gearboxes normally located?

- A. Near the top of the compressor**
- B. Near the bottom of the compressor**
- C. Inside the combustion chamber**
- D. At the tailpipe**

Gearboxes in the accessory drive are part of powering the engine's helpers like fuel pumps, oil pumps, and generators, and they're driven from the core. Their usual placement at the bottom of the compressor is intentional because gravity aids oil drainage and return to the sump, keeping lubrication reliable and clean. It also makes inspection and maintenance easier since the bottom area is typically more accessible on most engine installations. Placing the gearbox elsewhere would complicate drainage and lubrication paths and would expose the drive to heat or exhaust in ways that aren't practical. So they're located near the bottom of the compressor.

4. In the accessory section, where is the Power Take-Off (PTO) located?

- A. Front of compressor bulb**
- B. Rear of turbine**
- C. Inside the combustion chamber**
- D. On the exhaust manifold**

The power take-off is part of the accessory drive mounted on the accessory gear box at the front of the engine, connected to the compressor drive shaft. This front location places the PTO where it can reliably power accessories (like pumps and generators) while staying away from the hot turbine and exhaust areas. The other locations would not provide a safe or practical drive for accessories.

5. The turbine rotor disk functions mainly as which entity?

- A. Provides mounting surface for turbine blades**
- B. Houses the exhaust nozzle**
- C. Directs fuel spray into the combustion chamber**
- D. Serves as the intake plenum**

The turbine rotor disk is the hub that the turbine blades attach to, serving as the mounting surface for the blades and the means by which their mechanical energy is transferred to the shaft. Blades are mounted into slots (often through fir-tree or dovetail roots) in the disk, and as high-energy gas acts on the blades, the disk converts that energy into rotational energy carried by the shaft. This is why the disk's primary role is to hold and support the blades and carry the resulting torque. Exhaust nozzles are part of directing the turbine's exhaust flow, fuel spray is introduced in the combustor, and the intake plenum concerns the air entering the compressor. Those functions lie outside the rotor disk's job.

6. Which heat transfer method can occur in a vacuum?

- A. Radiation**
- B. Conduction**
- C. Convection**
- D. Evaporation**

In a vacuum, there's no material medium to carry heat by touching or by moving a fluid, so conduction and convection can't occur. The only way heat can move across empty space is by radiation, which travels as electromagnetic waves. All objects emit thermal radiation based on their temperature, so heat can transfer from a hotter body to a cooler one through space without any matter in between. Evaporation involves a phase change of a liquid and is not a heat transfer method that operates across a vacuum by itself, whereas radiation does not require a medium. That's why radiation is the correct choice.

7. Standard atmospheric pressure in PSI?

- A. 14.7 PSI**
- B. 101.3 PSI**
- C. 7.5 PSI**
- D. 0.5 PSI**

At sea level, the standard atmosphere is defined as 101.325 kilopascals, which equals 760 millimeters of mercury, and is about 14.7 psi. This is the baseline pressure used in aviation for altimeters and many calculations. The other values are not correct for standard sea-level air pressure: 101.3 psi is far higher than standard, while 7.5 psi and 0.5 psi are far too low for Earth's sea-level atmosphere.

8. Barometric pressure at standard conditions is measured as which of the following?

- A. 30.00 inches of mercury or 15.0 PSI**
- B. 29.92 inches of mercury or 14.7 PSI**
- C. 28.50 inches of mercury or 13.5 PSI**
- D. 31.00 inches of mercury or 16.0 PSI**

Standard barometric pressure at sea level is defined as one atmosphere, which equals 29.92 inches of mercury. In pounds per square inch, that same pressure is about 14.7 psi. This set value—29.92 inHg and 14.7 psi—is the reference used in aviation and meteorology for calibrating instruments and describing altitude in relation to the standard atmosphere. The other options are simply not the defined standard: they are close or farther off from 29.92 inHg, which is why they aren't the correct standard values.

9. According to Newton's second law, acceleration is inversely proportional to the object's what?

A. Mass

B. Speed

C. Time

D. Radius

The relationship $F = m a$ shows that for a given net force, acceleration decreases as mass increases. This is because acceleration is the rate at which velocity changes, and mass represents inertia—the resistance to that change. When you push on something with the same push, a lighter object speeds up more quickly than a heavier one because the heavier object resists changing its motion more. So, acceleration is inversely proportional to mass: if you double the mass while keeping the force the same, the acceleration halves. Think of pushing a light cart versus a heavy pallet. The cart speeds up noticeably faster under the same push, while the pallet barely changes speed. Speed, time, and radius don't set this direct relationship in the same way: speed is how fast you're moving, time is how long you apply the force, and radius matters for circular motion via a different form of acceleration ($a = v^2/r$). The key idea here is that, with the same net force, heavier objects accelerate less because their greater mass produces greater inertia.

10. Which unit is used on the barometric scale to express standard atmospheric pressure?

A. Inches of mercury

B. PSI

C. Pascal

D. Newton per square meter

The barometric scale on an aircraft altimeter is calibrated in inches of mercury because it's based on the traditional mercury barometer used to measure atmospheric pressure. Standard sea-level pressure is defined as 29.92 inches of mercury, so the instrument reads pressure as the height of a mercury column. This unit provides a direct, intuitive link between pressure and altitude readings that pilots rely on. In contrast, PSI is a unit tied to force per area used in other contexts (like tire pressure), and Pascal (or Newton per square meter) are SI units that aren't the conventional readout for the altimeter's barometric scale, though they describe the same physical pressure. Converting 29.92 inHg gives about 1013 hPa or 101325 Pa, but the cockpit altimeter's barometric scale remains inches of mercury.

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://aviationmachinistmateweek1.examzify.com>

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

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