

ACS Airman Certification Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

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Questions

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- 1. During which phase of a thunderstorm does precipitation begin?**
 - A. Cumulus phase**
 - B. Mature phase**
 - C. Dissipating phase**
 - D. Distribution phase**
- 2. What is the weight and balance limit for an aircraft?**
 - A. Must not exceed the certified limits for safe operation**
 - B. Should be as close to the maximum weight as possible**
 - C. Only applies when taking off from a small airport**
 - D. Varies depending on the flight conditions**
- 3. What is the function of the stabilator on an aircraft?**
 - A. To provide pitch control and improve stall characteristics**
 - B. To enhance roll stability during flight**
 - C. To assist with yaw control**
 - D. To increase drag and reduce speed**
- 4. What effect does gyroscopic precession describe?**
 - A. Stability of the gyroscope**
 - B. Speed of the gyroscope's spin**
 - C. Tilt or turn of the rotor axis**
 - D. Increase in rotational momentum**
- 5. What critical role does the ATC system serve in airspace?**
 - A. Scheduling maintenance checks**
 - B. Preventing collision between aircraft**
 - C. Directing flight paths for commercial airlines**
 - D. Monitoring weather conditions**
- 6. Which instrument is used to determine the aircraft's speed relative to the surrounding air?**
 - A. The altimeter**
 - B. The airspeed indicator**
 - C. The vertical speed indicator**
 - D. The heading indicator**

- 7. What is a key function of the landing gear in an aircraft?**
- A. Stability during flight**
 - B. Shock absorption during landing**
 - C. Fuel storage**
 - D. Weight distribution**
- 8. How many hours of flight training with an instructor are required before certification?**
- A. 5 hours**
 - B. 10 hours**
 - C. 20 hours**
 - D. 15 hours**
- 9. What is the minimum requirement for current passenger carrying within 90 days?**
- A. Three takeoffs and landings**
 - B. Five takeoffs and landings**
 - C. Two takeoffs and landings**
 - D. One takeoff and landing**
- 10. What is the recommended action if the control yoke becomes unresponsive?**
- A. Maintain aircraft control and follow emergency procedures**
 - B. Pull the emergency landing gear**
 - C. Disconnect all autopilot systems**
 - D. Attempt to reset the control systems**

Answers

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

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Explanations

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1. During which phase of a thunderstorm does precipitation begin?

- A. Cumulus phase**
- B. Mature phase**
- C. Dissipating phase**
- D. Distribution phase**

The correct answer is the mature phase because this is the stage in a thunderstorm's lifecycle when significant precipitation occurs. During the mature phase, the thunderstorm reaches its peak intensity, resulting in heavy rain, larger hail, and stronger winds. This phase is characterized by a well-developed updraft alongside a corresponding downdraft, which facilitates the falling of precipitation from the cloud. In contrast, during the cumulus phase, the thunderstorm is primarily developing and building with rising air currents, but no significant precipitation has yet formed. The dissipating phase follows the mature phase, where the storm begins to weaken, and precipitation decreases significantly. The distribution phase is not a recognized phase in the lifecycle of a thunderstorm, further emphasizing that the mature phase is the one during which precipitation begins.

2. What is the weight and balance limit for an aircraft?

- A. Must not exceed the certified limits for safe operation**
- B. Should be as close to the maximum weight as possible**
- C. Only applies when taking off from a small airport**
- D. Varies depending on the flight conditions**

The weight and balance limit for an aircraft is crucial for ensuring safe operations. The primary reason the correct choice is that the limits must not exceed the certified limits for safe operation is rooted in the importance of maintaining the aircraft's performance and control characteristics. These certified limits are established by the aircraft manufacturer and are based on extensive testing and analysis. Exceeding these limits can adversely affect the aircraft's stability, handling, and safety margins, leading to potentially hazardous situations during various phases of flight, including takeoff, cruise, and landing. Maintaining weight and balance within certified limits ensures that the aircraft operates within its design capabilities, optimizing performance, fuel efficiency, and safety. Properly managing weight and balance not only complies with regulations but also enhances the overall safety of the flight for the crew and passengers. In contrast, aiming for the maximum weight, only considering small airports, or varying limits based on flight conditions undermines the fundamental safety principles established in aviation. Thus, adhering to the certified weight and balance limits is essential for allowing the aircraft to operate safely and effectively within its designed capabilities.

3. What is the function of the stabilator on an aircraft?

- A. To provide pitch control and improve stall characteristics**
- B. To enhance roll stability during flight**
- C. To assist with yaw control**
- D. To increase drag and reduce speed**

The stabilator serves as an all-moving tailplane that combines the functions of both a stabilizer and an elevator. Its primary role is to provide pitch control, allowing the pilot to raise or lower the aircraft's nose, which is crucial for both climbing and descending. The stabilator's design enhances the aircraft's stall characteristics, making it more stable at low speeds, which is essential for safe handling during critical phases of flight such as takeoff and landing. When the stabilator is used effectively, it can also improve the aircraft's responsiveness to pitch inputs, leading to more precise control. This function is particularly beneficial in high-performance aircraft where the potential for stalling is greater. The other options provided refer to functions that are more associated with different control surfaces or aspects of aircraft performance that the stabilator does not address directly.

4. What effect does gyroscopic precession describe?

- A. Stability of the gyroscope**
- B. Speed of the gyroscope's spin**
- C. Tilt or turn of the rotor axis**
- D. Increase in rotational momentum**

Gyroscopic precession refers to the phenomenon that occurs when a force is applied to a spinning gyroscope. Specifically, it describes how the axis of the gyroscope will shift or tilt at a right angle to the applied force. When a torque is exerted on a spinning rotor, instead of tipping in the direction of that force, the rotor changes direction and begins to move at a right angle to the direction of the applied force, creating a tilting or turning motion of the rotor's axis. This concept is crucial in aviation and other applications that utilize gyroscopic instruments, such as aircraft orientation and navigation systems. Understanding gyroscopic precession helps pilots anticipate and manage the behavior of flight controls and instruments influenced by gyroscopic forces.

5. What critical role does the ATC system serve in airspace?

- A. Scheduling maintenance checks**
- B. Preventing collision between aircraft**
- C. Directing flight paths for commercial airlines**
- D. Monitoring weather conditions**

The ATC (Air Traffic Control) system plays a vital role in preventing collisions between aircraft. This function is essential for ensuring the safety of all air operations. Air traffic controllers manage the safe and orderly flow of aircraft in the sky and on the ground, utilizing radar, radio communication, and other tools to maintain safe distances between aircraft. By providing instructions for altitude and navigational changes, the ATC system actively mitigates the risk of mid-air collisions, thereby enhancing flight safety. While directing flight paths for commercial airlines and monitoring weather conditions are part of the broader aviation environment, they do not encapsulate the primary purpose of the ATC system as effectively as the prevention of collisions does. Scheduling maintenance checks pertains more to aircraft upkeep and operations rather than the direct function of air traffic management.

6. Which instrument is used to determine the aircraft's speed relative to the surrounding air?

A. The altimeter

B. The airspeed indicator

C. The vertical speed indicator

D. The heading indicator

The airspeed indicator is the instrument specifically designed to measure the aircraft's speed relative to the surrounding air. It functions by comparing the dynamic pressure of the air flowing into the pitot tube with the static pressure from the static port. The difference between these pressures gives the airspeed, which is vital for the pilot to ensure safe flight operations, such as maintaining appropriate speeds for takeoff, landing, and maneuvering. The other instruments serve different purposes: the altimeter measures altitude based on atmospheric pressure, the vertical speed indicator shows the rate of climb or descent, and the heading indicator provides the direction in which the aircraft is pointed. Each of these instruments plays an essential role in flight, but only the airspeed indicator directly provides information about the aircraft's speed in relation to the air around it.

7. What is a key function of the landing gear in an aircraft?

A. Stability during flight

B. Shock absorption during landing

C. Fuel storage

D. Weight distribution

The landing gear plays a crucial role in shock absorption during landing. When an aircraft descends and ultimately touches down on the runway, the abrupt change in speed and the forces exerted on the aircraft can create significant stress. The landing gear is designed with shock absorbing systems, often utilizing struts that contain hydraulic fluid or air, to cushion this impact. This helps to protect the structure of the aircraft and ensures a smoother transition from flight to ground. Stability during flight, fuel storage, and weight distribution are indeed important aspects of aircraft design, but they do not specifically relate to the primary purpose of the landing gear. While stability during flight is influenced by factors such as the aircraft's design and control surfaces, it is not a function of the landing gear. Fuel storage is typically associated with fuel tanks located in the wings or fuselage, not in the landing gear structure. Weight distribution involves how the aircraft's weight is balanced during flight and landing, but effectively managing shock loads during landing is a key mechanical function of the landing gear itself.

8. How many hours of flight training with an instructor are required before certification?

- A. 5 hours**
- B. 10 hours**
- C. 20 hours**
- D. 15 hours**

The requirement of 20 hours of flight training with an instructor is grounded in ensuring that the pilot candidate gains sufficient experience and knowledge in key areas of flight operation. This includes learning various maneuvers, understanding aircraft systems, and gaining practical experience under the guidance of a qualified instructor. The 20 hours provide a structured environment for the student to build foundational skills, making them better equipped to handle complex situations when flying solo. Other options present lower hour requirements, which may not offer enough comprehensive training to adequately prepare a candidate for safe solo flight operations. The established 20-hour training ensures that candidates are well-prepared and possess the necessary competencies and confidence before they are certified to fly independently.

9. What is the minimum requirement for current passenger carrying within 90 days?

- A. Three takeoffs and landings**
- B. Five takeoffs and landings**
- C. Two takeoffs and landings**
- D. One takeoff and landing**

The minimum requirement for carrying passengers within the preceding 90 days is indeed three takeoffs and landings. This regulation ensures that pilots maintain their proficiency in handling both the takeoff and landing phases of flight, which are critical components of a flight operation, especially when passengers are involved. Completing three takeoffs and landings allows pilots to demonstrate their ability to effectively manage the aircraft during these essential phases, which is crucial for safety. This requirement is particularly important as it reflects both the practical skills and current experience necessary for safely operating an aircraft with passengers on board. The other options do not meet the regulatory standards necessary for passenger transport. For example, two takeoffs and landings, or one takeoff and landing, would not provide sufficient demonstration of readiness and proficiency for handling an aircraft with passengers. Therefore, adhering to the requirement of three is vital for ensuring a higher standard of safety in aviation.

10. What is the recommended action if the control yoke becomes unresponsive?

- A. Maintain aircraft control and follow emergency procedures**
- B. Pull the emergency landing gear**
- C. Disconnect all autopilot systems**
- D. Attempt to reset the control systems**

The recommended action when the control yoke becomes unresponsive is to maintain aircraft control and follow emergency procedures. This is crucial because the foremost priority in any emergency situation is to ensure the aircraft remains controllable. By focusing on maintaining control, the pilot can prevent further escalation of the situation, such as risking a stall or other dangerous flight conditions. Following emergency procedures is integral to effectively managing the situation. These procedures are designed based on the specific aircraft and its systems, providing pilots with step-by-step guidance on how to respond to different types of malfunctions. This structured response helps reduce confusion and increases the likelihood of a safe outcome. The other choices do not directly address the immediate need to maintain control of the aircraft. For instance, pulling the emergency landing gear could lead to unnecessary complications if the aircraft needs to be maneuvered actively. Disconnecting all autopilot systems may not be advisable, especially if the autopilot is the only functionality keeping the aircraft stable. Attempting to reset the control systems without first ensuring that the aircraft is under control could lead to loss of control in a critical moment. Thus, prioritizing control and adhering to established emergency protocols is the most effective response to a scenario where the control yoke is unresponsive.