FAA Assembly & Rigging Practice Test (Sample)

Study Guide

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Questions

1. **What occurs during the inspection of the flight control system of an airplane equipped with differential-type aileron control?**

   A. Each aileron has a greater up travel than down travel

   B. Both ailerons move in unison

   C. The ailerons are fixed and do not move

   D. Up travel and down travel are equal

2. **Why is it advisable to keep a logbook during the assembly and rigging process?**

   A. To track progress and provide historical data for maintenance

   B. To make assembly processes easier

   C. To record personal observations

   D. To ensure compliance with FAA regulations

3. **Why is it important to use the correct type of fasteners during aircraft assembly?**

   A. They are lighter and easier to install

   B. They ensure structural integrity and safety of the aircraft

   C. They can be reused without damage

   D. They improve the overall appearance of the aircraft

4. **What will happen to the cable tension in an all-metal aircraft rigged to correct tension in a heated hangar when operated in very cold weather?**

   A. Increase as the aircraft cools

   B. Decreas when the aircraft structure and cables become cold

   C. Remain unchanged regardless of temperature

   D. Become erratic, varying with the temperature

5. **How can the dihedral angle of a wing be measured?**

   A. By placing a straightedge and level protractor on the front spar

   B. Using a digital angle measuring tool on the wingtip

   C. By assessing the overall wing shape visually

   D. By flying the aircraft and adjusting based on level flight

6. The primary purpose of the vertical fin on an aircraft is to provide what?

A. Lift during takeoff

B. Directional stability

C. Drag reduction

D. Increased speed

7. Why is it critical to ensure uniform travel arcs for control surfaces?

A. It affects fuel consumption

B. It assists in achieving accurate control management

C. It enhances passenger comfort

D. It facilitates faster takeoff

8. Main rotor blades that do not cone by the same amount during rotation are said to be what?

A. Out of trim

B. Pitched

C. Out of track

D. In balance

9. What role do pre-flight checklists play in rigging assessment?

A. Assess aesthetic alignment

B. Verify compliance with operational specifications

C. Settle disputes among technicians

D. Imply maintenance requirements

10. Which cable type is commonly used in primary control systems where operation over pulleys is frequent?

A. 1/8 inch cable

B. 3/16 inch cable

C. 3/4 inch cable

D. 3

Answers

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

Explanations

1. What occurs during the inspection of the flight control system of an airplane equipped with differential-type aileron control?

A. Each aileron has a greater up travel than down travel

B. Both ailerons move in unison

C. The ailerons are fixed and do not move

D. Up travel and down travel are equal

In a differential-type aileron control system, the design allows for each aileron to have a greater up travel than down travel. This is intentional and serves a critical aerodynamic purpose. When the pilot initiates a roll by deflecting the ailerons, the aileron on the rising wing (the up aileron) deflects more and creates a greater angle, which increases lift on that wing. Conversely, the aileron on the descending wing (the down aileron) deflects less, which helps to reduce drag and adverse yaw. This differential movement contributes to a more balanced and controlled roll response, ensuring that the aircraft does not yaw excessively in the opposite direction of the roll, which can occur with equal aileron travels. In essence, having greater up travel enhances the efficiency and effectiveness of the aileron system during flight maneuvers, making it a vital aspect of flight control. The other options describe scenarios that do not accurately represent the characteristics of differential aileron control systems. Option indicating that both ailerons move in unison lacks the distinctiveness of roll control provided by differential movement, while stating that the ailerons are fixed implies a complete lack of mobility, contradicting

2. Why is it advisable to keep a logbook during the assembly and rigging process?

A. To track progress and provide historical data for maintenance

B. To make assembly processes easier

C. To record personal observations

D. To ensure compliance with FAA regulations

Keeping a logbook during the assembly and rigging process is highly advisable for several reasons, and tracking progress while providing historical data for maintenance is one of the most crucial aspects. Documenting each step of the assembly and rigging procedure creates a detailed record of what was done, when it was done, and any specific observations or issues encountered. This historical data is invaluable for future maintenance and inspections, as it provides a clear picture of the aircraft's assembly history, any modifications made, and recurring issues that may need to be addressed. Additionally, a well-maintained logbook can assist technicians by offering insights into previous troubleshooting efforts and successful practices that can streamline the assembly and maintenance processes going forward. This practice supports good maintenance management and enhances the overall safety and reliability of the aircraft. While other options may have their merits, they do not encompass the comprehensive benefits that an organized logbook provides in the context of tracking progress and maintaining a historical record.

3. Why is it important to use the correct type of fasteners during aircraft assembly?

A. They are lighter and easier to install

B. They ensure structural integrity and safety of the aircraft

C. They can be reused without damage

D. They improve the overall appearance of the aircraft

Using the correct type of fasteners during aircraft assembly is crucial for ensuring the structural integrity and safety of the aircraft. Fasteners are critical components that hold various parts of an aircraft together; they must be capable of withstanding the loads and stresses encountered during operations, such as takeoff, flight, and landing. If inappropriate fasteners are used, it could lead to structural failure, which would pose serious safety risks to the aircraft, its crew, and passengers. Additionally, fasteners are designed with specific materials and properties to suit the various parts of an aircraft, taking into account factors like weight, environmental exposure, and type of load. This specialization helps maintain the overall performance and durability of the aircraft. The correct fasteners are vital for compliance with aviation regulations and standards, which are established to ensure safety in aviation operations. Using the right type of fasteners contributes significantly to the reliability and operational efficiency of the aircraft throughout its lifespan.

4. What will happen to the cable tension in an all-metal aircraft rigged to correct tension in a heated hangar when operated in very cold weather?

A. Increase as the aircraft cools

B. Decreas when the aircraft structure and cables become cold

C. Remain unchanged regardless of temperature

D. Become erratic, varying with the temperature

In an all-metal aircraft, the materials used for both the structure and the cables have properties that respond predictably to temperature changes. As the temperature decreases, the metal components, including the cables and the airframe, contract. This contraction leads to a reduction in the length of the cables, which decreases their tension. When an aircraft is rigged to a specific tension in a heated hangar, it is adjusted while the materials are expanded due to the heat. Once the aircraft is taken into very cold weather, the subsequent cooling causes both the aircraft structure and the cables to contract. Consequently, the tension in the cables will decrease because they are effectively becoming shorter and tighter as opposed to being elongated in warmer conditions. Therefore, the tension in the cables will specifically decrease when exposed to colder temperatures, making this the correct and logical answer. The other options do not accurately describe the physical principles at play regarding metal compression and tension in response to temperature changes.

5. How can the dihedral angle of a wing be measured?

A. By placing a straightedge and level protractor on the front spar

B. Using a digital angle measuring tool on the wingtip

C. By assessing the overall wing shape visually

D. By flying the aircraft and adjusting based on level flight

The dihedral angle of a wing is the angle between its two wings relative to a horizontal plane, and it plays a significant role in the stability of an aircraft. The dihedral angle can be measured accurately by placing a straightedge along the front spar of the wing and using a level protractor to determine the angle. This method provides a direct and precise measurement of the angle, as the straightedge helps establish a reference line, while the level protractor can accurately gauge the angle between the wing's surface and the horizontal reference. Measuring the dihedral angle visually or through other less precise methods could result in inaccuracies, which is critical since the dihedral angle affects the aircraft's roll stability. Using a digital angle measuring tool on the wingtip might seem reasonable, but this method may not account for any irregularities or variations in the wing structure that could affect the accuracy of the measurement. Similarly, assessing wing shape visually is subjective and lacks the precision required for an accurate measurement. Adjusting the angle based on flight behavior is also not a viable method for measurement, as it relies on performance observations rather than a definitive measurement technique.

6. The primary purpose of the vertical fin on an aircraft is to provide what?

A. Lift during takeoff

B. Directional stability

C. Drag reduction

D. Increased speed

The primary purpose of the vertical fin on an aircraft is to provide directional stability. The vertical fin, which is part of the aircraft's tail structure, plays a critical role in maintaining the aircraft's balance and stability during flight. It helps to keep the aircraft aligned with its direction of travel, preventing yawing motions, which can occur if the aircraft is subjected to crosswinds or other disturbances. By providing a vertical surface that interacts with the airflow around the aircraft, the fin generates aerodynamic forces that counteract any unwanted lateral movements. This stability is essential for ensuring that the aircraft maintains a straight flight path and can respond predictably to control inputs from the pilot or autopilot systems. In essence, the vertical fin is integral to the aircraft's overall stability and control, which is crucial for safe and effective flying. In contrast, aspects like lift during takeoff, drag reduction, and increased speed are more closely associated with other parts of the aircraft, such as the wings and fuselage design. While these elements are also important in the overall aerodynamic performance, the specific role of the vertical fin centers around providing the necessary directional stability that is vital for flight safety and control.

7. Why is it critical to ensure uniform travel arcs for control surfaces?

A. It affects fuel consumption

B. It assists in achieving accurate control management

C. It enhances passenger comfort

D. It facilitates faster takeoff

Ensuring uniform travel arcs for control surfaces is essential for achieving accurate control management. Control surfaces, such as ailerons, elevators, and rudders, are responsible for maneuvering the aircraft in flight. When these surfaces move uniformly and predictably throughout their range of motion, pilots can exert precise control over the aircraft's attitude and direction. If the control surfaces do not travel uniformly, it can lead to imbalanced responses, which may result in difficulty managing the aircraft during flight. For instance, if one aileron moves differently than the other, it can cause unwanted rolling or yawing motion, complicating the pilot's ability to maintain stable flight or perform maneuvers effectively. Uniform travel arcs also contribute to the aircraft's structural integrity and longevity, since uneven movement can place stress on components. Thus, accurate control management is critically dependent on the uniformity of the control surfaces' travel arcs, making it vital for overall flight safety and performance.

8. Main rotor blades that do not cone by the same amount during rotation are said to be what?

A. Out of trim

B. Pitched

C. Out of track

D. In balance

Main rotor blades that do not cone by the same amount during rotation are referred to as "out of track." This condition indicates a difference in the vertical displacement or coning angle of the rotor blades. When rotor blades are properly tracked, they travel through the same plane and maintain a uniform coning angle, allowing for smooth operation and balanced flight. However, if one blade coning more or less than the other leads to potential vibration and handling issues during flight. Tracking ensures that all rotor blades operate co-ordinated, which is crucial for maintaining stability and control of the rotorcraft. If blades are out of track, it can cause one blade to lift more or less than the others, leading to yaw imbalance and other aerodynamic complications, which can ultimately affect safety. The other choices, although related to rotor performance, describe different conditions. "Out of trim" generally pertains to the alignment of the rotor blades with respect to the aircraft's center of gravity and control surfaces, rather than their coning. "Pitched" usually refers to the angle of attack of the blades rather than the vertical alignment during rotation. "In balance" describes the weight distribution of the blades and their effect on the helicopter's center of gravity, not their coning angle.

9. What role do pre-flight checklists play in rigging assessment?

A. Assess aesthetic alignment

B. Verify compliance with operational specifications

C. Settle disputes among technicians

D. Imply maintenance requirements

Pre-flight checklists serve an essential purpose in ensuring the safety and functionality of aircraft systems, particularly in rigging assessment. The primary role of these checklists is to verify that all components meet operational specifications. This involves confirming that rigging is adjusted and aligned correctly according to manufacturer guidelines and safety standards. By following a pre-flight checklist, technicians and pilots can systematically review each aspect of the rigging system, ensuring that all necessary adjustments and inspections have been executed before takeoff. Adhering to these specifications is vital for maintaining aircraft performance and safety, as any deviations could lead to operational issues or safety hazards during flight. The other options relating to aesthetic alignment and disputes among technicians do not directly pertain to the functional and operational aspects that checklists are designed to address, while maintenance requirements, though important, are typically separate from the immediate assessment of rigging for a specific flight.

10. Which cable type is commonly used in primary control systems where operation over pulleys is frequent?

A. 1/8 inch cable

B. 3/16 inch cable

C. 3/4 inch cable

D. 3

The correct choice reflects a misunderstanding of common cable types used in primary control systems. In the context of this question, when considering primary control systems that frequently operate over pulleys, it's important to focus on cable diameters that provide the necessary balance of strength, flexibility, and resistance to wear. Typically, smaller diameters like 1/8 inch and 3/16 inch cables are more appropriate for such applications because they are often easier to route over pulleys and will not add unnecessary weight to the control system. These smaller cables also provide the required flexibility to navigate around pulleys without being excessively rigid. In contrast, a diameter of 3/4 inch is generally too large for typical control systems where frequent pulley operations are common, as it would be more suited for applications requiring heavy lifting or structural support rather than delicate control mechanisms. Understanding these specifications is crucial in ensuring that the selected cable not only meets operational demands but also enhances the overall efficacy and reliability of the control systems in aviation.