FAA A&P Airframes Oral and Practical Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. What is the primary function of trim tabs on an aircraft?

A. To assist in the aircraft's takeoff speed

B. To allow for hands-off flight steering

C. To increase stall speed

D. To change the aircraft's weight distribution

2. What can result from an overload in the electrical system when using electric motors?

A. Improved motor efficiency

B. Increased lifespan of the motor

C. Short circuiting or overheating

D. Reduced power consumption

3. What is a balance trim tab designed to assist with?

A. To stabilize the pitch of the aircraft

B. To assist in moving a control surface by creating aerodynamic forces

C. To enhance the aircraft’s speed capabilities

D. To reduce control forces during turns

4. How is the stem of a self-plugging (friction lock) rivet handled during installation?

A. The stem is twisted until it breaks off

B. The stem is pulled until it snaps off

C. The stem is left untrimmed

D. The stem is pushed through the head

5. What is the purpose of reinforcing tape in aircraft fabric covering?

A. To enhance thermal insulation

B. To prevent the lacing cord from cutting through the fabric

C. To add weight for stability

D. To improve aesthetics

6. Why are lightweight steel bushings sometimes used in wooden structures?

- **A. They improve the aesthetic quality of the wood.**
- **B. Bushings prevent the wood from being crushed when bolts are tightened.**
- **C. They increase the weight of the structure for stability.**
- **D. They decrease the friction between wooden components.**

7. What is another factor that can contribute to dope blushing?

- **A. Thinning the dope excessively**
- **B. Moisture in the spray system**
- **C. Using synthetic bristles for application**
- **D. Applying too many coats in a short time**

8. Which four types of high lift devices are the most common?

- **A. Leading and trailing edge flaps, ailerons, and slots**
- **B. Leading and trailing edge flaps, slats, and slots**
- **C. Slats, speed brakes, and elevators**
- **D. Flaps, slats, and stabilators**

9. Aircraft covering fabrics are primarily made from which two types of materials?

- **A. Metal and wood**
- **B. Organic and synthetic materials**
- **C. Nylon and polyester**
- **D. Cotton and silk**

10. What should be done as a safety precaution when completing a gas welding project?

- **A. Leave the gases pressurized**
- **B. Only turn off the oxygen valve**
- **C. Turn off all valves and relieve gas pressures**
- **D. Cover the torch with a protective cap**

Answers

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

Explanations

1. What is the primary function of trim tabs on an aircraft?

A. To assist in the aircraft's takeoff speed

B. To allow for hands-off flight steering

C. To increase stall speed

D. To change the aircraft's weight distribution

The primary function of trim tabs on an aircraft is to allow for hands-off flight steering. Trim tabs are small adjustable surfaces located on the trailing edges of flight control surfaces, such as ailerons, elevators, or rudders. Their main purpose is to help maintain the desired flight attitude without the pilot needing to exert constant pressure on the controls. When a pilot adjusts the trim tab, it alters the aerodynamic characteristics of the control surface, creating a force that balances the aircraft's control inputs. This allows the aircraft to fly straight and level, climb, or descend without requiring continuous effort from the pilot, thereby enhancing comfort and efficiency during flight. The other options, while related to aircraft operation, do not pertain directly to the primary function of trim tabs. They do not assist in takeoff speed, directly affect stall speed, or change the aircraft's weight distribution. Trim tabs simplify the pilot's workload by providing stability and control during cruise and other phases of flight.

2. What can result from an overload in the electrical system when using electric motors?

A. Improved motor efficiency

B. Increased lifespan of the motor

C. Short circuiting or overheating

D. Reduced power consumption

An overload in the electrical system when using electric motors can lead to short circuiting or overheating due to excessive current flowing through the motor's windings. Electrical components are designed to operate safely within specified limits; when these limits are exceeded, it can cause significant issues. When the current exceeds the motor's rated capacity, the windings can overheat, potentially damaging insulation and leading to short circuits, which may result in a complete failure of the motor. This overheating not only risks the immediate operation of the motor but can also lead to fires or damage to other electrical components in the system. Hence, it is critical to maintain proper electrical load and usage conditions to ensure the motor operates efficiently and safely, avoiding conditions that may result in damage from overpowering.

3. What is a balance trim tab designed to assist with?

A. To stabilize the pitch of the aircraft

B. To assist in moving a control surface by creating aerodynamic forces

C. To enhance the aircraft’s speed capabilities

D. To reduce control forces during turns

A balance trim tab is specifically designed to assist in moving a control surface by creating aerodynamic forces. This device is typically attached to control surfaces such as elevators and ailerons and works by changing the aerodynamic characteristics of the control surface. When the trim tab is deflected, it generates a force that helps keep the control surface in a desired position with less input from the pilot. This can significantly reduce pilot workload, especially during long flights. The trim tab allows pilots to achieve and maintain a certain flight attitude without constant control input, thus ensuring smoother flight and improving overall handling. It’s particularly beneficial for stabilizing the aircraft in certain flight conditions, allowing for hands-off flying in a specified configuration. In contrast, while stabilizing pitch is a function associated with elevator control surfaces, that is not the primary purpose of a balance trim tab. Similarly, enhancing speed capabilities or reducing control forces during turns may involve different aerodynamic principles or surface designs, but they do not accurately define the primary role of the balance trim tab in aircraft design and operation.

4. How is the stem of a self-plugging (friction lock) rivet handled during installation?

A. The stem is twisted until it breaks off

B. The stem is pulled until it snaps off

C. The stem is left untrimmed

D. The stem is pushed through the head

During the installation of a self-plugging (friction lock) rivet, the correct procedure involves pulling the stem until it snaps off. This method is essential because it ensures that the rivet has adequately formed a secure and strong joint by allowing the plug inside the rivet to reach its designed locking mechanism. As the stem is pulled, it creates the necessary tension required to drive the rivet into the material, forming the flush head. Once the required tension is achieved, the stem will break, leaving the rivet properly installed with the internal plug securely locked in place. This mechanism plays a crucial role in the rivet's effectiveness, as it differs from traditional rivet installation methods that may not use a self-locking feature. The other options do not align with the intended installation process for a self-plugging rivet, as twisting or leaving the stem untrimmed would not allow for the proper locking action and could compromise the rivet's performance. Pushing the stem through the head is also incorrect as it does not pertain to how the rivet is designed to work; instead, it relies on pulling to achieve the necessary snap-off action for effective installation.

5. What is the purpose of reinforcing tape in aircraft fabric covering?

A. To enhance thermal insulation

B. To prevent the lacing cord from cutting through the fabric

C. To add weight for stability

D. To improve aesthetics

Reinforcing tape is a crucial component in aircraft fabric covering as it serves the specific function of preventing the lacing cord from cutting through the fabric. During the assembly process, lacing cords are used to secure the fabric to the airframe structure; however, without reinforcement, these cords can bear down on the fabric and create weak points where they may eventually cut through. The reinforcing tape provides additional strength and distributes the load over a wider area, significantly reducing the risk of damage to the fabric. This enhancement is essential for maintaining the integrity and safety of the aircraft covering, ensuring that it can withstand flight stresses and environmental conditions.

6. Why are lightweight steel bushings sometimes used in wooden structures?

A. They improve the aesthetic quality of the wood.

B. Bushings prevent the wood from being crushed when bolts are tightened.

C. They increase the weight of the structure for stability.

D. They decrease the friction between wooden components.

Lightweight steel bushings are used in wooden structures primarily to prevent the wood from being crushed when bolts are tightened. In applications where fasteners are used to secure parts of a wooden structure, the compression of wood fibers can lead to damage, such as crushing or splitting, especially when high torque is applied. The steel bushings act as a reinforcing sleeve that distributes the load over a larger area and provides a stable surface for the fasteners. This reduces the risk of structural failure and prolongs the integrity of the wood by allowing for proper fastening without compromising the material. The other options do not accurately capture the primary function of bushings in this context, focusing instead on aspects like aesthetics, weight implications, and friction, which are secondary considerations compared to the critical protective role of the bushings in maintaining the strength and durability of the wooden structure.

7. What is another factor that can contribute to dope blushing?

A. Thinning the dope excessively

B. Moisture in the spray system

C. Using synthetic bristles for application

D. Applying too many coats in a short time

Dope blushing occurs when the dope (a type of paint used in finishing aircraft surfaces) becomes milky or whitish in appearance, which can be influenced by several factors. Moisture in the spray system is a key contributor to this phenomenon because when moisture combines with the solvents in the dope, it can cause the paint to lose its clarity as it dries. This is particularly important in conditions of high humidity or if water has inadvertently entered the spray system. Ensuring that the spray system is dry and free of moisture helps in achieving a clear finish without the blushing effect. Other factors, such as thinning the dope excessively, applying too many coats too quickly, or using inappropriate application brushes, may affect the application process, but the presence of moisture directly interacts with the chemical properties of the dope, making it a primary factor in dope blushing.

8. Which four types of high lift devices are the most common?

A. Leading and trailing edge flaps, ailerons, and slots

B. Leading and trailing edge flaps, slats, and slots

C. Slats, speed brakes, and elevators

D. Flaps, slats, and stabilators

The correct answer, indicating that the most common high lift devices are leading and trailing edge flaps, slats, and slots, highlights the essential components that enhance lift during critical phases of flight, primarily takeoff and landing. Leading edge flaps are located on the front part of the wing and are deployed to increase the camber of the wing, allowing for a greater angle of attack without stalling. This enhancement in wing shape increases lift at lower speeds, which is crucial during takeoff. Trailing edge flaps are found at the back of the wing and similarly increase the wing's camber and area, producing additional lift. These flaps are often larger and can be deployed in various configurations to provide optimal lift depending on the aircraft's situation. Slats are similar to leading edge flaps in that they are mounted on the front of the wing and create a slot between the slat and the wing. This slot allows high-energy airflow to remain attached to the wing surface at higher angles of attack, which delays stall and further enhances lift. Slots, which can be fixed or movable, serve a similar function by providing a pathway for airflow that helps maintain airflow over the wing, which improves lift characteristics at low speeds. Together,

9. Aircraft covering fabrics are primarily made from which two types of materials?

A. Metal and wood

B. Organic and synthetic materials

C. Nylon and polyester

D. Cotton and silk

The primary materials used in aircraft covering fabrics are organic and synthetic materials, making this choice the most comprehensive and accurate. Organic materials typically refer to natural fibers derived from plants or animals, such as cotton or linen, which were historically widely used in aircraft covering due to their light weight and strength. Synthetic materials include various modern fabrics like nylon and polyester, which have evolved to provide excellent durability, resistance to environmental conditions, and overall performance characteristics that are vital for aviation applications. When considering the advancements in aircraft fabric coverings, synthetic materials have significantly enhanced the properties of fabrics used for aircraft. They offer improved resistance to moisture, tearing, and UV degradation compared to traditional organic fibers, making them a preferred choice in contemporary aircraft manufacturing. The other options present materials that do not encompass the full range of aircraft fabric coverings or are historically significant but less prevalent in modern applications.

10. What should be done as a safety precaution when completing a gas welding project?

A. Leave the gases pressurized

B. Only turn off the oxygen valve

C. Turn off all valves and relieve gas pressures

D. Cover the torch with a protective cap

For safety precautions while completing a gas welding project, it is crucial to turn off all valves and relieve gas pressures. This action helps to prevent any potential accidents that may occur from leftover pressurized gases, which could lead to leaks or even explosions if the torch is accidentally ignited after the job is complete. By turning off all valves, you ensure that both the fuel gas and oxygen supplies are completely shut off, eliminating the risk of residual gas remaining in the system. Relieving gas pressures further mitigates the risk by ensuring that there is no possibility of pressure buildup, which could be hazardous in the event of an unexpected ignition source. This approach is part of standard safety protocols in welding to ensure a safe working environment, particularly in minimizing fire hazards associated with flammable gases. Proper shutdown procedures are fundamental to promoting safety and preventing accidents in any gas welding environment.