Jeppesen’s Airframe Oral & Practical (O&P) Practice Exam (Sample)

Study Guide

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Questions

1. Beyond aesthetics, what is a reason for touching up painted surfaces on aircraft?

A. Improving fuel efficiency

B. Reducing or eliminating general corrosion

C. Enhancing maneuverability

D. Increasing resale value

2. Where would you find information on acceptable limits of windshield delamination?

A. In the aircraft's operating handbook

B. In reference material provided by the manufacturer

C. On the exterior of the windshield

D. In pilot training materials

3. What quantity is accurately measured by a capacitance-type fuel quantity indicating system?

A. The volume of the fuel.

B. The temperature of the fuel.

C. The mass of the fuel.

D. The pressure of the fuel.

4. Why is a fuel jettison system typically divided into two separate systems?

A. To comply with regulatory requirements

B. To maintain lateral stability when jettisoning fuel

C. To reduce complexity in design

D. To allow for quick fuel refill procedures

5. What indicates that the landing gear is down and locked?

A. A red light or an auditory cue

B. A green light or another visual indicator

C. A checklist verification

D. Engine power settings

6. Which aircraft instruments are typically connected to the pitot-static system?

A. The compass, altimeter, and horizontal indicator

B. The altimeter, vertical speed indicator, and airspeed indicator

C. The airspeed indicator, tachometer, and altimeter

D. The altimeter and engine pressure gauge

7. If replacing a 2024 rivet with a 2117 rivet, how do you determine the appropriate size?

A. Always use the same size rivet

B. For 5/32" or smaller, use the next larger size 2117 rivet

C. Use any size as long as the spacing is correct

D. Only use larger rivets regardless of size

8. How will the switches be connected if an aircraft with retractable landing gear has only one green light indicating the gear is down and locked?

A. In parallel

B. In series

C. Randomly

D. With a cross-connection

9. What maintenance function most significantly affects tire service life?

A. Regular washing of tires

B. Ensuring proper inflation

C. Using high-quality materials

D. Aligning the tires during maintenance checks

10. Prior to making a continuity check, what must be done to an electrical circuit?

A. The power must be turned on

B. The power must be turned off

C. All connections must be tightened

D. The circuit must be overloaded

Answers

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

Explanations

1. Beyond aesthetics, what is a reason for touching up painted surfaces on aircraft?

A. Improving fuel efficiency

B. Reducing or eliminating general corrosion

C. Enhancing maneuverability

D. Increasing resale value

Touching up painted surfaces on aircraft serves several important functions beyond aesthetics, with a significant reason being the reduction or elimination of general corrosion. Aircraft are constantly exposed to harsh environmental conditions, including moisture, chemicals, and varying temperatures, which can lead to paint degradation. When painted surfaces are chipped or worn, the underlying metal becomes vulnerable to corrosion. By performing touch-ups, the protective barriers that paint provides are restored, which helps to prevent moisture and other corrosive agents from making contact with the metal surfaces. This is critical in maintaining the structural integrity and safety of the aircraft over time. Proactively addressing paint wear through touch-ups can significantly prolong the life of the aircraft and its components, ultimately minimizing repair costs associated with corrosion damage. Other options, while they may have their merits, do not directly relate to the primary function of touch-up painting in terms of protecting the aircraft's surfaces from corrosion. For instance, while improving fuel efficiency may be a desired outcome of maintaining streamlined surfaces, it is not the primary reason for paint touch-ups. Similarly, enhancing maneuverability and increasing resale value, although positive aspects, are not direct protection measures against corrosion, making the focus on corrosion reduction the most pertinent rationale for this maintenance practice.

2. Where would you find information on acceptable limits of windshield delamination?

A. In the aircraft's operating handbook

B. In reference material provided by the manufacturer

C. On the exterior of the windshield

D. In pilot training materials

The information regarding acceptable limits of windshield delamination is typically found in the reference material provided by the manufacturer. This documentation includes specific maintenance manuals, aircraft service manuals, and other technical documents that outline the manufacturer’s guidelines for inspections, repairs, and limitations regarding components like the windshield. While the aircraft's operating handbook contains important operational information, it is not usually the source for detailed specifications about physical component conditions such as delamination. The exterior of the windshield does not provide any technical data; it may only display the manufacturer’s name or model information. Pilot training materials focus on operational procedures and emergency procedures rather than the specifics of structural or material integrity, which is why they would not contain this information. Thus, for detailed limits and conditions regarding windshield delamination, the manufacturer’s reference materials are the most reliable sources.

3. What quantity is accurately measured by a capacitance-type fuel quantity indicating system?

A. The volume of the fuel.

B. The temperature of the fuel.

C. The mass of the fuel.

D. The pressure of the fuel.

A capacitance-type fuel quantity indicating system measures the quantity of fuel based on capacitance changes within a fuel tank. This system works by utilizing capacitive sensors that detect the dielectric constant of the fuel. As the level of fuel changes, the dielectric constant varies, and this change is translated into a reading that correlates to the mass of the fuel. Measuring mass is crucial because it provides a more accurate assessment of fuel on board than volume alone. Fuel density can fluctuate with temperature and other conditions, impacting volume measurements. Consequently, focusing on mass ensures that pilots and flight planners can make more informed decisions regarding fuel management and flight safety. In contrast, volume, temperature, and pressure are not directly measured by this type of system; rather, they may be affected by the mass of the fuel or require other separate systems for accurate readings. Hence, recognizing that capacitance-type systems specifically assess fuel mass helps clarify their primary functionality in aviation.

4. Why is a fuel jettison system typically divided into two separate systems?

A. To comply with regulatory requirements

B. To maintain lateral stability when jettisoning fuel

C. To reduce complexity in design

D. To allow for quick fuel refill procedures

A fuel jettison system is typically divided into two separate systems primarily to maintain lateral stability when jettisoning fuel. When an aircraft is in flight and needs to jettison fuel, especially during emergency situations such as an overweight landing or to meet landing weight restrictions, doing so in a controlled manner is crucial for maintaining balance and stability. By separating the jettison systems, pilots can selectively jettison fuel from one side of the aircraft, which mitigates the risk of imbalances that could affect the aircraft's handling and performance. This is essential for ensuring that the aircraft remains controllable during the fuel jettison process. If fuel were to be released equally from both sides, it could cause the aircraft to become unbalanced, potentially leading to difficulty in recovery or control issues during critical flight phases. Thus, the design takes into account aerodynamic and stability considerations for safe operation. While compliance with regulatory requirements and reducing complexity in design are important factors in aircraft engineering, they do not address the specific functional necessity of maintaining stability during fuel jettisoning. Similarly, quick fuel refill procedures do not specifically require the system to be divided in that manner. The primary focus of the dual system is indeed centered on the aircraft's operational stability.

5. What indicates that the landing gear is down and locked?

A. A red light or an auditory cue

B. A green light or another visual indicator

C. A checklist verification

D. Engine power settings

The correct answer is that a green light or another visual indicator signifies that the landing gear is down and locked. In aviation, color-coded indicators are used as a standard method to communicate the status of critical systems. A green light typically indicates a safe condition, confirming that the landing gear has extended fully and is properly secured in the locked position, ensuring safety during landing. Visual indicators are essential for pilots, especially during critical phases of flight such as landing, as they provide immediate and clear information about the gear status without requiring additional actions like checking a checklist or relying on auditory signals. This clear, instant feedback helps improve pilot situational awareness and enhances safety. Other options, such as a red light or auditory cues, generally indicate an unsafe condition regarding the landing gear, such as it not being fully extended or locked. Similarly, while checklist verification is a crucial part of aviation procedures and safety, it is a step that comes after visual inspection and is not a direct indicator of the landing gear status. Engine power settings are unrelated to gear position and do not provide any information about whether the landing gear is down and locked.

6. Which aircraft instruments are typically connected to the pitot-static system?

A. The compass, altimeter, and horizontal indicator

B. The altimeter, vertical speed indicator, and airspeed indicator

C. The airspeed indicator, tachometer, and altimeter

D. The altimeter and engine pressure gauge

The correct answer highlights the instruments that rely on the pressure data from the pitot-static system, which plays a crucial role in measuring altitude and airspeed. The altimeter uses static pressure to determine the aircraft's altitude relative to sea level, while the vertical speed indicator measures the rate of climb or descent based on changing static pressure. The airspeed indicator also uses dynamic pressure from the pitot tube in combination with static pressure to provide airspeed readings. In contrast, the other options include instruments that do not connect to the pitot-static system. For example, the compass and horizontal indicator primarily rely on magnetic fields rather than pressure changes. Instruments such as the tachometer, which measures engine RPM, or engine pressure gauges, which are not influenced by static air pressure, also do not utilize the pitot-static system for their functions. Thus, the combination of the altimeter, vertical speed indicator, and airspeed indicator accurately reflects the reliance on the pitot-static system for measuring flight dynamics.

7. If replacing a 2024 rivet with a 2117 rivet, how do you determine the appropriate size?

A. Always use the same size rivet

B. For 5/32" or smaller, use the next larger size 2117 rivet

C. Use any size as long as the spacing is correct

D. Only use larger rivets regardless of size

Using a 2117 rivet in place of a 2024 rivet requires consideration of the size for proper structural integrity and performance. The correct approach is to use the next larger size of the 2117 rivet for those that are 5/32" or smaller. This is crucial because 2117 rivets have different mechanical properties than 2024 rivets, and their strength characteristics, as well as their ability to endure environmental factors, can affect the overall durability of the assembly. The guidance to select the next larger size when switching to a different alloy ensures that the rivet maintains an adequate shear and tensile strength profile suitable for the application. The difference in material properties between the two types means that a larger size needs to compensate for any potential loss in load-bearing capabilities resulting from the switch. Choosing the same size rivet, as suggested in other answers, may not account for the differences in mechanical properties and could compromise structural integrity. Options suggesting using any size where spacing is correct or only using larger rivets without regard to size overlook the essential guidelines necessary for maintaining safety and performance standards in aircraft structures.

8. How will the switches be connected if an aircraft with retractable landing gear has only one green light indicating the gear is down and locked?

A. In parallel

B. In series

C. Randomly

D. With a cross-connection

In an aircraft with retractable landing gear, the indication system typically utilizes a single green light to show that the landing gear is down and locked. When this light is illuminated, it signifies that all the necessary conditions for the gear being safely locked in position have been met. To achieve this functionality, the switches used in the landing gear system are connected in series. In a series circuit, the current flows through each switch sequentially. For the green light to illuminate, the circuit must be complete, meaning that all switches involved (such as position switches for each gear strut) need to indicate that the gear is down and locked. This arrangement ensures that if any switch fails or if the gear is not in the correct position, the circuit will be open, and the green light will not be illuminated, thereby providing a clear indication to the pilot. The series connection is crucial for safety, as it directly correlates the position of the gear with the indicator light's functionality. If the indicator were connected in parallel, the system would also illuminate the light if just one of the switches was closed, which could lead to a false indication that the gear is down and locked when it is not. In summary, the series connection of the switches ensures that the

9. What maintenance function most significantly affects tire service life?

A. Regular washing of tires

B. Ensuring proper inflation

C. Using high-quality materials

D. Aligning the tires during maintenance checks

Ensuring proper inflation is crucial for tire service life because tires that are correctly inflated distribute the vehicle's weight evenly across their surface, allowing for optimal performance and avoiding uneven wear. Proper inflation levels help to maintain the tire's shape and structural integrity, which directly influences handling, traction, and fuel efficiency. Under-inflated tires can lead to excessive heat buildup and increased rolling resistance, causing premature wear and potential blowouts. Conversely, over-inflation can create a rigid tire that does not adequately absorb shocks, resulting in a rough ride and increased risk of damage. Thus, maintaining the correct tire pressure significantly enhances the longevity and reliability of tires.

10. Prior to making a continuity check, what must be done to an electrical circuit?

A. The power must be turned on

B. The power must be turned off

C. All connections must be tightened

D. The circuit must be overloaded

Turning off the power before making a continuity check is essential for safety and accuracy. A continuity check involves testing a circuit to ensure that electrical current can flow through it without interruption. If the power is on, not only is there a risk of electric shock, but the test results could be misleading. With power flowing through the circuit, you might receive false readings due to voltage present, making it unclear whether the circuit is truly continuous or if there is simply live current flowing. By de-energizing the circuit, you can safely use a multimeter or ohmmeter to detect continuity. This approach allows for accurate readings, ensuring the integrity of the circuit and confirming that all paths are clear for current flow when the power is restored. Therefore, ensuring that the power is turned off is a critical step in the procedure for a continuity check.