

Embraer Regional Jet (ERJ) Systems Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

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SAMPLE

Questions

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- 1. What parameter must be checked for an OK takeoff according to the criteria?**
 - A. Flaps matching MCDU**
 - B. Trim in red range**
 - C. Spoilers extended**
 - D. Parking brake engaged**
- 2. What condition allows for the activation of the automatic wheel braking system?**
 - A. Touchdown only**
 - B. When spinning without gear**
 - C. Before the landing gear is retracted**
 - D. While in flight**
- 3. What occurs when the DUMP button is pressed in AUTO or LFE mode?**
 - A. Packs and recirc fans turn off**
 - B. Cabin climbs at 2000ft/min up to 12400 feet**
 - C. Both packs and recirc fans turn off, and cabin climbs at 2000ft/min up to 12400 feet**
 - D. No change in cabin pressure**
- 4. Under what condition will ACMP 3B turn on automatically in the air?**
 - A. ACMP 3A failure**
 - B. PTU activation**
 - C. Dual engine failure**
 - D. EDP 1 failure**
- 5. How can the H-PBIT be initiated?**
 - A. Only manually**
 - B. Only automatically**
 - C. Both manually or automatically**
 - D. Upon flight control movement**

- 6. What is the primary role of the thrust reversers in the ERJ-145?**
- A. To increase engine power during takeoff**
 - B. To redirect engine thrust forward for deceleration**
 - C. To assist with fuel efficiency**
 - D. To improve climb rate**
- 7. What is the primary function of the outflow valve?**
- A. Controls cabin temperature**
 - B. Regulates airflow out of the aircraft to maintain pressurization**
 - C. Monitors cabin altitude**
 - D. Ignores outside air pressure**
- 8. What triggers the automatic deployment of the RAT?**
- A. Excessive load on the electrical system**
 - B. Loss of normal AC power**
 - C. Failure of the batteries**
 - D. Overheating of the generators**
- 9. When implementing the Cargo Fire Suppression Rule of 3, what is required for a non-annunciated fire?**
- A. 1 press of the button**
 - B. 2 presses of the button**
 - C. 3 presses of the button**
 - D. No pressing required**
- 10. Which type of check is the most comprehensive and includes major repairs for the ERJ aircraft?**
- A. A-Checks**
 - B. B-Checks**
 - C. C-Checks**
 - D. D-Checks**

Answers

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

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Explanations

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1. What parameter must be checked for an OK takeoff according to the criteria?

- A. Flaps matching MCDU**
- B. Trim in red range**
- C. Spoilers extended**
- D. Parking brake engaged**

For an acceptable takeoff, it is critical that the flaps are set to the correct position as indicated by the Multi-Function Control Display Unit (MCDU). This ensures that the aircraft has the appropriate aerodynamic configuration for takeoff, which is essential for achieving the necessary lift and performance characteristics at the moment of takeoff. Flaps help improve the lift-to-drag ratio and are vital for safe operations during this critical phase of flight. If the flaps do not match the settings on the MCDU, it may indicate a pre-flight configuration error, which could have serious implications for the aircraft's performance and safety during takeoff. Confirming that flaps are correctly set as per the MCDU allows the pilot to ensure the aircraft is in optimal condition for departure. Taking into consideration the other options: trim settings are usually monitored but should not be in the red range, indicating some adjustment is required; spoilers should be in the retracted position during takeoff; and the parking brake should be disengaged to allow for movement on the runway. Thus, verifying flap settings is essential for a safe and effective takeoff.

2. What condition allows for the activation of the automatic wheel braking system?

- A. Touchdown only**
- B. When spinning without gear**
- C. Before the landing gear is retracted**
- D. While in flight**

The automatic wheel braking system on the Embraer Regional Jet is designed to activate under specific conditions to ensure optimal safety and efficiency during operations. One of the primary conditions for activation is before the landing gear is retracted. This timing allows the system to ensure the aircraft is prepared for landing while also managing the braking functions effectively as soon as weight is applied to the wheels during touchdown. When the landing gear is extended and prior to retraction, the system can prepare to engage the brakes automatically as part of the overall operational procedures. This is crucial for controlling the aircraft and ensuring stability throughout the landing and takeoff phases. Touchdown activation primarily pertains to manual or secondary systems intervening rather than the automatic system initiating. The operation while spinning without gear and in flight does not align with the intended use of the automatic brake system, as these phases do not involve ground contact where braking would typically be applied. Thus, the focus on conditions prior to gear retraction aligns with the aircraft's operational design and safety protocols.

3. What occurs when the DUMP button is pressed in AUTO or LFE mode?

- A. Packs and recirc fans turn off**
- B. Cabin climbs at 2000ft/min up to 12400 feet**
- C. Both packs and recirc fans turn off, and cabin climbs at 2000ft/min up to 12400 feet**
- D. No change in cabin pressure**

When the DUMP button is pressed in AUTO or LFE mode, it activates a specific cabin pressurization response intended to rapidly change the cabin environment. Specifically, pressing the DUMP button results in both the packs and recirculation fans being turned off. This is essential as it allows for an immediate drop in cabin pressure, facilitating a rapid ascent for the cabin to achieve a more neutral pressure state. Additionally, the system allows the cabin to climb at a rate of 2000 feet per minute, ceasing at a maximum altitude of 12,400 feet. This coordinated action between shutting down the environmental systems and controlling the cabin altitude serves to stabilize the pressure in emergencies or operational requirements, achieving a balance necessary for situations where cabin pressure needs to be rapidly altered. The combination of both the cabin ascent and the deactivation of the environmental systems is the key reason that this answer is the most comprehensive and accurate for this scenario.

4. Under what condition will ACMP 3B turn on automatically in the air?

- A. ACMP 3A failure**
- B. PTU activation**
- C. Dual engine failure**
- D. EDP 1 failure**

ACMP 3B is designed to activate automatically in the air under specific conditions to ensure hydraulic system reliability and redundancy. When ACMP 3A experiences a failure, it decreases the available hydraulic pressure in the system; therefore, ACMP 3B will turn on to maintain hydraulic pressure and support the essential functions that rely on this hydraulic system. This automatic activation is part of the aircraft's safety features, ensuring that critical systems remain operational even when there's a failure in one of the hydraulic pumps. Ensuring adequate hydraulic power is crucial for various operations, including flight controls and landing gear operation. Understanding the interdependencies between these components is essential for pilot decision-making and system management during flight. The other options do not trigger the automatic activation of ACMP 3B in the same way. For instance, PTU activation is a manual or system-initiated response to pressure imbalances and does not relate directly to ACMP 3A's operational status. Similarly, a dual engine failure or EDP 1 failure would involve different responses and would not necessarily cause ACMP 3B to activate automatically.

5. How can the H-PBIT be initiated?

- A. Only manually
- B. Only automatically
- C. Both manually or automatically**
- D. Upon flight control movement

The Health and Power Built-In Test (H-PBIT) can be initiated through both manual and automatic means, which is why the correct choice is that it can occur in both ways. When initiated manually, a crew member typically engages the system through specific controls in the cockpit, allowing for a controlled and intentional test of the aircraft systems. This capability is crucial during pre-flight checks, ensuring that any potential issues with the aircraft's systems are identified and addressed before takeoff. Conversely, the H-PBIT can also be triggered automatically based on certain conditions or parameters that are met during flight. Automatic initiation allows the system to perform checks without requiring pilot intervention, ensuring that the aircraft remains in a safe operational state without needing constant oversight by the flight crew. This dual capability enhances the reliability of the system by providing comprehensive coverage for testing, making sure that any malfunctions can be detected promptly, regardless of whether they occur during routine checks or in-flight scenarios.

6. What is the primary role of the thrust reversers in the ERJ-145?

- A. To increase engine power during takeoff
- B. To redirect engine thrust forward for deceleration**
- C. To assist with fuel efficiency
- D. To improve climb rate

The primary role of the thrust reversers in the ERJ-145 is to redirect engine thrust forward for deceleration. When a plane lands, it needs to slow down efficiently and effectively. By reversing the thrust produced by the engines, the thrust reversers help to create deceleration forces that counteract the forward motion of the aircraft. This aids in reducing the landing distance and helps ensure a safe and controlled stop on the runway. Redirecting thrust forward significantly enhances braking performance, especially on shorter runways or in adverse weather conditions, where additional stopping power is critical for safety. Therefore, utilizing thrust reversers is an essential part of managing landing dynamics, making this function a vital aspect of aircraft operation. In contrast, the other options do not align with the fundamental purpose of thrust reversers. For example, increasing engine power during takeoff focuses on the opposite function of thrust reversers, and assisting with fuel efficiency is not a primary role of thrust reversers during landing. Similarly, improving climb rate pertains to different aspects of engine performance that do not involve thrust reversal during landing operations.

7. What is the primary function of the outflow valve?

- A. Controls cabin temperature
- B. Regulates airflow out of the aircraft to maintain pressurization**
- C. Monitors cabin altitude
- D. Ignores outside air pressure

The primary function of the outflow valve is to regulate airflow out of the aircraft to maintain pressurization. In a pressurized aircraft, it plays a crucial role in controlling the amount of air that escapes the cabin, which directly influences the cabin pressure. By adjusting its position, the outflow valve can either allow more air to be expelled, reducing the cabin pressure, or restrict airflow, increasing the cabin pressure as needed during different flight phases, such as ascent and descent. This regulation is essential for passenger comfort and safety, ensuring that the cabin altitude remains at a breathable level throughout the flight. The outflow valve works in conjunction with the cabin pressure controller, which monitors the pressure and commands the outflow valve to adjust accordingly. In contrast, while cabin temperature management is an important aspect of the environmental control system, it does not relate directly to the function of the outflow valve. The outflow valve is specifically focused on pressure regulation rather than temperature control. Monitoring cabin altitude is also important, but is done through separate sensors and systems rather than through the outflow valve itself. Ignoring outside air pressure would not be a functional attribute of the outflow valve, as it actively responds to external conditions to maintain safety and comfort within the cabin.

8. What triggers the automatic deployment of the RAT?

- A. Excessive load on the electrical system
- B. Loss of normal AC power**
- C. Failure of the batteries
- D. Overheating of the generators

The automatic deployment of the Ram Air Turbine (RAT) is primarily triggered by the loss of normal AC power. This event is critical because the RAT serves as an emergency power source when the aircraft's main electrical systems fail. The loss of normal AC power indicates that the aircraft is in a critical situation; hence, deploying the RAT provides essential electrical power and hydraulic pressure needed to maintain control and operation of the aircraft systems during emergency conditions. In scenarios where normal AC power is lost, the RAT automatically extends into the airstream, generating its own power through the airflow. This is vital in ensuring that necessary systems can still function and that flight crew have control during an emergency. Other potential triggers listed, such as excessive load on the electrical system or failure of the batteries, do not cause the RAT to deploy automatically. Instead, these situations may lead to different operational responses or require pilots to take action manually. Overheating of the generators may indicate issues, but it does not directly lead to the activation of the RAT. Thus, loss of normal AC power remains the key condition that triggers the RAT's automatic deployment for emergency power support.

9. When implementing the Cargo Fire Suppression Rule of 3, what is required for a non-annunciated fire?

- A. 1 press of the button**
- B. 2 presses of the button**
- C. 3 presses of the button**
- D. No pressing required**

When addressing the Cargo Fire Suppression Rule of 3 for a non-annunciated fire, the requirement is to press the button once. This action activates the fire suppression system, allowing the crew to respond to a potential cargo fire without requiring confirmation from a warning system, as it does not provide an explicit indication of a fire. The Rule of 3 is designed to ensure a quick, decisive action in the event of a fire, reflecting the urgency to manage such critical situations effectively. Consequently, pressing the button once is sufficient to begin the necessary suppression measures, acknowledging that the crew is taking proactive steps without waiting for further indications or signals. This minimizes potential delays in response time during an emergency situation.

10. Which type of check is the most comprehensive and includes major repairs for the ERJ aircraft?

- A. A-Checks**
- B. B-Checks**
- C. C-Checks**
- D. D-Checks**

The most comprehensive type of check for Embraer Regional Jets is the D-Check. This extensive maintenance check is typically performed every 6 to 10 years and is the most thorough examination of the aircraft. It involves a detailed inspection of the entire aircraft structure, systems, and components. During a D-Check, numerous systems are disassembled, inspected, repaired as necessary, and often overhauled to ensure the aircraft's safety and airworthiness for continued service. D-Checks also usually include major repairs, modifications, and updates that may not be conducted during the other, less comprehensive checks. Given the scope of work involved, D-Checks are more time-consuming and costly compared to the routine inspections like A-Checks and C-Checks, which focus on less critical tasks or are performed more frequently. This significant effort and attention to detail in the D-Check are essential for maintaining the long-term operational integrity and safety of the aircraft.