T-1A Jayhawk Instrument/Navigation Phase (XPW) IT Practice Test (Sample)

Study Guide

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Questions

1. What is the entry cone for ICAO course reversals?

A. 30 degrees

B. 60 degrees

C. 45 degrees

D. 90 degrees

2. What should you do if the head of the course arrow is outside the top half of the HSI during the turn?

A. Adjust your altitude

B. Re-evaluate your course

C. Continue turning to adjust the angle

D. Complete the turn without adjustment

3. What does ATC's instruction "climb and maintain" indicate about altitude restrictions on a SID?

A. You must adhere to SID altitude restrictions

B. You may disregard the SID altitude restrictions

C. You cannot climb unrestricted

D. You must maintain the SID altitude

4. While arcing north on the 15 DME arc, what is your lead point to intercept the 310° radial outbound at 0.50 Mach?

A. 1 NM

B. 3 NM

C. 5 NM

D. 10 NM

5. What would be your required pitch change at FL 300 and 60 DME to cross at 10 DME at 5000 ft, assuming speed stays the same?

A. 3 degrees

B. 4 degrees

C. 5 degrees

D. 6 degrees

6. When should you assume lost communications when being radar vectored prior to final on a PAR or ASR?

A. 30 seconds

B. 1 minute

C. 2 minutes

D. 5 seconds

7. What is the acceptable range for heading indicators during the instrument cockpit check?

A. Within 10 degrees of the runway heading

B. Within 5 degrees of the runway heading

C. Within 15 degrees of the runway heading

D. Within 1 degree of the runway heading

8. According to IMC procedures, what should be the pitch angle for takeoff?

A. 10° to 12°

B. 12° to 14°

C. 13° to 15°

D. 15° to 17°

9. What is the standard procedure when you are cleared for a "timed" approach?

A. Fly at max speed until established

B. Maintain a straight path unless instructed

C. Prepare to follow the designated procedure turn

D. Initiate turns upon hearing "turn"

10. At what altitude do you start to level off in a climb for FL210 if the VSI is 3000 fpm?

A. FL 200

B. FL 210

C. FL 220

D. FL 230

Answers

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

Explanations

1. What is the entry cone for ICAO course reversals?

A. 30 degrees

B. 60 degrees

C. 45 degrees

D. 90 degrees

The entry cone for ICAO course reversals is 60 degrees. This refers to the standardized angular range that is used to configure the flight path for aircraft that are executing a turn to reverse their course. When a pilot initiates a course reversal, understanding the entry cone is crucial for maintaining proper airspace and ensuring safe operations. The 60-degree entry allows for sufficient space for the aircraft to safely establish a new flight path without committing too far off the original route, accommodating typical aircraft performance and navigation standards. This angle not only aids in maintaining a smooth flight profile during the maneuver but also aligns with ICAO's regulations, which promote safety and predictability in air traffic management. The other angles, while they may be relevant in different contexts, do not apply to ICAO course reversals, as they do not meet the specific requirements and best practices outlined for this maneuver.

2. What should you do if the head of the course arrow is outside the top half of the HSI during the turn?

A. Adjust your altitude

B. Re-evaluate your course

C. Continue turning to adjust the angle

D. Complete the turn without adjustment

When the head of the course arrow is outside the top half of the Horizontal Situation Indicator (HSI) during a turn, it indicates that you are not aligned with your intended course. Continuing to turn allows you to adjust your heading to bring the course arrow back towards the top of the HSI, which means you are realigning with your desired pathway. It is essential for maintaining your course accurately and ensuring that you are on the correct track for navigation. This action helps to ensure that any deviation from your intended path can be corrected efficiently, improving situational awareness and overall flight management. By continuing your turn, you can effectively correct your heading and align back on course. Other answers would not adequately address the need for alignment during the maneuver. Adjusting altitude or completing the turn without any changes may lead to further deviation from the intended track, while re-evaluating the course would require additional time and may not address the immediate concern of aligning the aircraft with the desired course.

3. What does ATC's instruction "climb and maintain" indicate about altitude restrictions on a SID?

A. You must adhere to SID altitude restrictions

B. You may disregard the SID altitude restrictions

C. You cannot climb unrestricted

D. You must maintain the SID altitude

The instruction "climb and maintain" from Air Traffic Control (ATC) indicates that a pilot is permitted to disregard the altitude restrictions that might be part of a Standard Instrument Departure (SID). When ATC provides this instruction, it allows the aircraft to climb to and maintain a specified altitude without adhering to the interim altitude restrictions established in the SID procedure. This clear directive means pilots can prioritize the climb to ATC's specified altitude, thus enabling more direct compliance with traffic handling and ensuring safe separation from other air traffic. In many situations, ATC's instructions to climb and maintain can help facilitate a more efficient departure by optimizing flight paths and altitudes based on real-time traffic conditions. Therefore, this instruction serves to clear the way for greater operational flexibility for the pilot during the SID phase.

4. While arcing north on the 15 DME arc, what is your lead point to intercept the 310° radial outbound at 0.50 Mach?

A. 1 NM

B. 3 NM

C. 5 NM

D. 10 NM

When intercepting a radial while arcing around a distance measuring equipment (DME) arc, it is crucial to ensure a smooth transition from the arc to the desired radial. The lead point is the point at which you will begin your turn to intercept the radial, and it is influenced by factors such as your airspeed and the turn rate. At 0.50 Mach, the indicated airspeed is relatively high, which means that the aircraft's ground speed is also significant. A ground speed of approximately 300 knots at sea level translates to a quicker approach to the intended radial. The general rule of thumb for determining the lead point in nautical miles when performing a turn to intercept a radial is to consider the Mach speed and the accompanying distance from the radial. In this scenario, a lead of 3 nautical miles before the point of interception is appropriate, as it accounts for the transition time required to turn from the arc to the radial. This approach allows you to maintain proper airspeed while making a smooth and controlled transition, ultimately ensuring effective navigation. Choosing a 3 NM lead point also reflects practical experience and standard procedures used in aviation to create a buffer for the turn and mitigate over- or under-turning issues, ensuring you align correctly with

5. What would be your required pitch change at FL 300 and 60 DME to cross at 10 DME at 5000 ft, assuming speed stays the same?

A. 3 degrees

B. 4 degrees

C. 5 degrees

D. 6 degrees

To determine the required pitch change at FL 300 and 60 DME to cross at 10 DME at 5000 feet, you need to analyze the descent angle and calculate the pitch change necessary for the aircraft to reach the desired altitude of 5000 feet at the correct point. At FL 300 (30,000 feet), you're starting at a significant altitude and you need to descend to 5000 feet, a total vertical distance of 25,000 feet. The distance remaining to the 10 DME mark is a crucial factor in this calculation. Given that you're at 60 DME and need to reach 10 DME, you have 50 DME to cover vertically. Using a generalized rule of thumb for descents, it is often observed that for every 1000 feet of altitude to lose, an aircraft typically needs to cover around 3 miles horizontally. Therefore, for a 25,000-foot descent, you would generally need a descent angle of about 3 degrees. However, to account for the dynamics and necessary performance adjustments, particularly when considering the specifications of the T-1A Jayhawk's operational parameters, an average pitch change not only accommodates natural sink rates and aircraft performance but typically emphasizes a

6. When should you assume lost communications when being radar vectored prior to final on a PAR or ASR?

A. 30 seconds

B. 1 minute

C. 2 minutes

D. 5 seconds

When flying in a radar environment, particularly during a Precision Approach Radar (PAR) or an Airport Surveillance Radar (ASR) procedure, it's essential to know how long to wait before assuming lost communications. Assuming lost communications helps pilots maintain situational awareness and ensures safety when operating under radar control. The standard guideline is that if you are radar vectored and do not receive any further instructions for 1 minute, you should assume that you have lost communication. This timeframe allows for potential delays in transmissions that could occur due to various reasons such as radio interference or communication congestion. If 1 minute has passed without any contact, the proper protocol is to follow lost communication procedures, which would typically involve continuing on the last received heading or altitude, depending on the circumstances. The other durations provided in the choices are either too short or not aligned with standard practices for lost communications in this context. For instance, 30 seconds may not allow enough time for communication lags, and 2 minutes might be unnecessarily long, delaying safety measures. 5 seconds is also impractical, as it doesn't consider the potential for brief communication interruptions. Thus, waiting 1 minute before assuming lost communications is the appropriate and accepted procedure.

7. What is the acceptable range for heading indicators during the instrument cockpit check?

A. Within 10 degrees of the runway heading

B. Within 5 degrees of the runway heading

C. Within 15 degrees of the runway heading

D. Within 1 degree of the runway heading

The acceptable range for heading indicators during the instrument cockpit check is within 5 degrees of the runway heading. This standard ensures that the heading indicator is calibrated accurately and reflects the aircraft's actual heading, which is critical for safe navigation and proper instrument flight rules (IFR) operations. By maintaining this small margin, pilots can ensure that their situational awareness regarding orientation and course tracking is finely tuned, reducing the risk of navigational errors, especially during critical phases of flight such as takeoffs and approaches. A limit of 5 degrees allows for permissible variations while still retaining reliability in maintaining the intended flight path. The other options, while they imply some degree of variance, do not meet the stringent requirement necessary for precise aircraft control and navigation that is expected during cockpit checks, thereby emphasizing the importance of having tight tolerances in instrument calibration for successful instrument flight.

8. According to IMC procedures, what should be the pitch angle for takeoff?

A. 10° to 12°

B. 12° to 14°

C. 13° to 15°

D. 15° to 17°

The appropriate pitch angle for takeoff according to IMC (Instrument Meteorological Conditions) procedures is critical for ensuring a safe and effective climb. A pitch angle of 13° to 15° allows the aircraft to achieve the necessary airspeed while maintaining optimal climb performance. This pitch attitude helps to balance lift and drag effectively during the takeoff phase. Maintaining this specific pitch range ensures that the aircraft reaches a speed conducive to safe aerial operations while preventing any potential stall scenario that could occur if the angle is too steep. In the context of instrument flying, achieving the correct pitch attitude is particularly important as visual references may be limited, thus relying on instruments becomes crucial to ensure a safe takeoff and climb out.

9. What is the standard procedure when you are cleared for a "timed" approach?

A. Fly at max speed until established

B. Maintain a straight path unless instructed

C. Prepare to follow the designated procedure turn

D. Initiate turns upon hearing "turn"

When you are cleared for a "timed" approach, the standard procedure involves being prepared to follow the designated procedure turn. Timed approaches are often used in situations where an aircraft needs to maintain a specific time interval between them and the preceding aircraft, or where the approach must be closely managed to ensure safe traffic flow. The procedure turn provides a means to establish the aircraft on the correct inbound course while adhering to timing requirements. In this context, preparing for the procedure turn allows the pilot to set up for the approach adequately, ensuring that all necessary actions are taken to comply with the timing instructions provided by air traffic control. This adherence is essential for maintaining order and safety in busy airspace and ensuring that all aircraft can approach the runway in a safe and timely manner.

10. At what altitude do you start to level off in a climb for FL210 if the VSI is 3000 fpm?

A. FL 200

B. FL 210

C. FL 220

D. FL 230

When climbing to a specific flight level, such as FL210, pilots will need to consider the vertical speed at which they are climbing. In this case, with a vertical speed indicator (VSI) reading of 3000 feet per minute, you would anticipate reaching FL210 by calculating the altitude where you would need to begin leveling off to avoid overshooting the desired altitude. Typically, a good practice is to begin leveling off approximately 1000 feet below the target altitude to avoid exceeding it while maintaining a safety margin. Therefore, in this scenario, if your target is FL210, starting to level off around FL200 allows the aircraft to gradually reduce the climb rate and stabilize at the intended level. This altitude serves as a buffer to ensure an accurate and safe transition to level flight at FL210. Hence, leveling off at FL200 is the most suitable choice, as it aligns with these climbing practices and altitude management considerations.