

Drone Pilot Practice Exam (Sample)

Study Guide



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SAMPLE

Questions

- 1. At higher altitudes, which of the following typically increases risk during drone operations?**
 - A. Decreased aircraft visibility**
 - B. Increased wind speeds**
 - C. More frequent communications**
 - D. Warmer temperatures**
- 2. In which unit is air pressure in the atmosphere typically measured?**
 - A. Pascals**
 - B. Atmospheres**
 - C. Inches of mercury (Hg)**
 - D. Millibars**
- 3. What is the minimum visibility requirement at the location of the control station for flying a drone?**
 - A. 1 statute mile**
 - B. 2 statute miles**
 - C. 3 statute miles**
 - D. 4 statute miles**
- 4. To maintain visual line of sight, what can a remote pilot use?**
 - A. Telescopes**
 - B. Binoculars**
 - C. Contact lenses**
 - D. Smart glasses**
- 5. To prevent the final "link" in the accident chain, which methodology must a remote pilot consider?**
 - A. Emergency Action Plan**
 - B. Safety Management System**
 - C. Standard Operating Procedure**
 - D. Pilot Program Implementation**

- 6. What type of hazardous attitude is represented by the approach "fly first, ask questions later"?**
- A. Impulsivity**
 - B. Sensation-seeking**
 - C. Anti-authority**
 - D. Invulnerability**
- 7. What condition leads to a stall in an unmanned aircraft?**
- A. The wing exceeds its critical angle of attack**
 - B. The engine power is too low**
 - C. The aircraft is overloaded**
 - D. The control surfaces are unresponsive**
- 8. What might occur if the center of gravity of a UAS is too far aft?**
- A. The UAS will be more stable**
 - B. Recovering from a stall might be more difficult**
 - C. The UAS will fly faster**
 - D. There will be decreased drag**
- 9. If the UAS experiences a loss of function in reading and detecting speed, location/position, and altitude reporting during flight, what is likely malfunctioning?**
- A. Gyroscope**
 - B. Camera System**
 - C. GPS**
 - D. Battery**
- 10. What is the term for the rate at which temperature decreases with an increase in altitude?**
- A. Lapse Rate**
 - B. Drop Rate**
 - C. Altitude Differential**
 - D. Temperature Gradient**

Answers

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

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Explanations

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1. At higher altitudes, which of the following typically increases risk during drone operations?

- A. Decreased aircraft visibility**
- B. Increased wind speeds**
- C. More frequent communications**
- D. Warmer temperatures**

At higher altitudes, increased wind speeds are a significant factor that raises risks during drone operations. As drones ascend, they may encounter higher velocity winds that can affect their stability and control. Wind can lead to challenges such as difficulty in maintaining a steady flight path, potential loss of control, or even the possibility of the drone being pushed off course. This is especially critical for smaller drones, which may not have the power or stability to handle strong gusts. Decreased visibility can occur at higher altitudes due to atmospheric conditions, but it is not as universally problematic as increased wind speeds, which can have immediate and severe consequences on flight operations. While communication can become more frequent at greater altitudes due to changing conditions, it does not inherently increase risk the way unpredictable or strong winds do. Temperature variations with altitude may have effects, but they are generally less impactful on flight stability compared to wind conditions. Thus, understanding how winds behave at various altitudes is crucial for safe drone operation.

2. In which unit is air pressure in the atmosphere typically measured?

- A. Pascals**
- B. Atmospheres**
- C. Inches of mercury (Hg)**
- D. Millibars**

Air pressure in the atmosphere is commonly measured in several units, including inches of mercury (Hg), which is one of the traditional units used in weather forecasting and atmospheric sciences. The concept of measuring atmospheric pressure using a column of mercury dates back to the invention of the barometer, where the height of mercury in a tube reflects the weight of the air above it. While inches of mercury is widely recognized, other units such as Pascals (Pa), atmospheres (atm), and millibars (mbar) are also used. Pascals is the SI unit for pressure and is increasingly utilized in scientific applications. Millibars, which correlate closely to hectopascals, are commonly used in meteorology for weather maps. Lastly, atmospheres are a convenient unit for expressing pressure in relation to the average atmospheric pressure at sea level. The focus here on inches of mercury as a correct option reflects its historical and ongoing significance in practical applications, especially in the context of weather observation and reporting.

3. What is the minimum visibility requirement at the location of the control station for flying a drone?

- A. 1 statute mile**
- B. 2 statute miles**
- C. 3 statute miles**
- D. 4 statute miles**

The minimum visibility requirement at the location of the control station for flying a drone is 3 statute miles. This standard is established by the FAA to ensure that the remote pilot can maintain visual line of sight with the drone while operating it. This means that a pilot should be able to see the drone clearly without the aid of any visual enhancement tools, such as binoculars or telescopes. Maintaining a minimum visibility of 3 statute miles reduces the risk of collisions with other aircraft and allows the pilot to effectively monitor the drone's position and altitude, as well as any surrounding obstacles or hazards. Therefore, adhering to this visibility requirement is crucial for safe drone operations.

4. To maintain visual line of sight, what can a remote pilot use?

- A. Telescopes**
- B. Binoculars**
- C. Contact lenses**
- D. Smart glasses**

Maintaining visual line of sight (VLOS) is a crucial requirement for remote pilots operating drones, as it involves being able to see the drone at all times to ensure safe flight. The correct answer indicates that contact lenses can assist in achieving VLOS by correcting the pilot's vision, allowing them to see the drone clearly without obstruction. When a pilot wears contact lenses, they can eliminate any visual impairments, ensuring that they can maintain awareness of the drone's position and surroundings from a distance. This is particularly important as remote pilots must be able to visually monitor the drone's flight path and any obstacles or other aircraft in the area. Other options may provide visual assistance in different contexts, but they do not adhere to the practical requirements for maintaining VLOS. For example, telescopes and binoculars, while enhancing vision, can actually limit the pilot's ability to maintain VLOS since they direct focus at a specific object and can prevent the pilot from having a comprehensive view of the surroundings. Smart glasses may also offer augmented reality features, but they do not directly enhance the pilot's ability to see the drone without obstructing their general line of sight. Hence, using contact lenses enables remote pilots to properly fulfill the VLOS requirement effectively.

5. To prevent the final "link" in the accident chain, which methodology must a remote pilot consider?

- A. Emergency Action Plan**
- B. Safety Management System**
- C. Standard Operating Procedure**
- D. Pilot Program Implementation**

The correct answer, Safety Management System, is vital for preventing accidents in aviation, including drone operations. A Safety Management System (SMS) encompasses a systematic approach to managing safety risks, allowing remote pilots to identify, assess, and mitigate hazards proactively. By integrating safety into all aspects of operations, an SMS helps pilots understand and manage the complexities and potential dangers associated with flying drones. This includes continuous monitoring and evaluation, which helps refine safety protocols and ensure compliance with regulations. In contrast, while an Emergency Action Plan may be useful during emergencies, it does not address the proactive measures necessary to prevent incidents from occurring in the first place. Standard Operating Procedures provide important guidelines for specific operations, but they may not encompass a comprehensive approach to safety management. Pilot Program Implementation focuses more on introducing and executing new pilot programs rather than integrating safety as a core component of every operation. Overall, the SMS approach is most effective in breaking the accident chain by creating a culture of safety that encompasses all layers of operation.

6. What type of hazardous attitude is represented by the approach "fly first, ask questions later"?

- A. Impulsivity**
- B. Sensation-seeking**
- C. Anti-authority**
- D. Invulnerability**

The approach "fly first, ask questions later" best represents impulsivity. This hazardous attitude is characterized by a tendency to act quickly without fully considering the consequences or risks involved in a situation. Individuals exhibiting impulsivity may rush into flying or make hasty decisions, prioritizing immediate actions over careful planning and assessment. This mindset can lead to dangerous situations in aviation, where thorough pre-flight checks and risk assessments are critical for ensuring safety. Ultimately, impulsivity undermines judgment and can contribute to accidents or incidents, making it important for pilots to recognize and manage this particular attitude. Understanding impulsivity helps pilots develop a more disciplined approach to flying, emphasizing the importance of a thoughtful decision-making process.

7. What condition leads to a stall in an unmanned aircraft?

- A. The wing exceeds its critical angle of attack**
- B. The engine power is too low**
- C. The aircraft is overloaded**
- D. The control surfaces are unresponsive**

A stall in an unmanned aircraft occurs when the wing exceeds its critical angle of attack. The critical angle of attack is the maximum angle at which air can flow over the wing without separating from the surface. When this angle is exceeded, the smooth airflow over the wing is disrupted, leading to a significant loss of lift. This condition can occur regardless of airspeed, and it is primarily dependent on the angle between the wing and the oncoming air. While engine power, aircraft loading, and control surface responsiveness are all important factors in flight operations, none directly cause a stall in the same manner that exceeding the critical angle of attack does. Engine power being too low can lead to other issues, but it does not necessarily result in a stall by itself. Similarly, an overloaded aircraft may have performance limitations, but a stall is specifically related to the wing's angle of attack. Unresponsive control surfaces can complicate recovery from a stall but do not initiate the stall condition itself. Therefore, understanding the relationship between angle of attack and stall conditions is critical for safe unmanned aircraft operation.

8. What might occur if the center of gravity of a UAS is too far aft?

- A. The UAS will be more stable**
- B. Recovering from a stall might be more difficult**
- C. The UAS will fly faster**
- D. There will be decreased drag**

When the center of gravity (CG) of an Unmanned Aerial System (UAS) is positioned too far aft, it can lead to a decrease in stability, particularly during slower flight conditions. This potentially unstable configuration can make control of the aircraft more challenging, especially in the event of a stall. When a UAS stalls, it loses lift, and the way it responds to control inputs may be less predictable. Recovery from a stall typically relies on the ability to maintain control and pitch the nose down; if the CG is too far back, the aircraft may not pitch down as desired, making recovery more difficult. In this situation, the UAS may also exhibit a tendency to pitch up more easily, which can further exacerbate the challenge of controlling the aircraft. A well-balanced UAS, with the CG properly positioned, ensures a stable flight profile and facilitates easier recovery from adverse conditions such as stalls.

9. If the UAS experiences a loss of function in reading and detecting speed, location/position, and altitude reporting during flight, what is likely malfunctioning?

- A. Gyroscope**
- B. Camera System**
- C. GPS**
- D. Battery**

The correct answer focuses on the malfunctioning of the GPS, as this system is responsible for providing critical data related to the drone's speed, location, and altitude. In a drone, the GPS unit allows for precise navigation and positioning by receiving signals from satellites, which communicate the drone's current coordinates and elevation. If the UAS experiences a loss of function in reading and detecting speed, location/position, and altitude reporting, it indicates a failure in the GPS system, as these functions rely heavily on accurate GPS data. The inability to determine these metrics can severely impact the flight operation and safety of the UAV. Other systems mentioned, such as the gyroscope, contribute to stability and orientation control, helping to maintain the drone's position during flight, but they do not directly provide location or speed data in the same way GPS does. The camera system is focused on visual output and capturing images, while it may assist in navigation indirectly if equipped with certain technology, it does not provide speed or altitude readings. The battery, while crucial for power supply, primarily affects flight time and propulsion rather than positioning or altitude reporting.

10. What is the term for the rate at which temperature decreases with an increase in altitude?

- A. Lapse Rate**
- B. Drop Rate**
- C. Altitude Differential**
- D. Temperature Gradient**

The term that describes the rate at which temperature decreases with an increase in altitude is the lapse rate. This concept is crucial in meteorology and aviation, as it affects weather patterns, cloud formation, and aircraft performance. The lapse rate is usually expressed in degrees Celsius per kilometer or degrees Fahrenheit per thousand feet. Understanding the lapse rate is essential for drone pilots and other aviation professionals. As a drone ascends, the air temperature typically decreases, which can influence the drone's battery performance and lift capabilities due to the changes in air density. Being aware of the lapse rate helps pilots anticipate how altitude changes might impact their flight operations. The other terms, such as drop rate, altitude differential, and temperature gradient, do not specifically define the phenomenon of temperature decrease with altitude in the same context, making lapse rate the appropriate and accurate terminology in this scenario.