Aviation Structural Mechanic Second Class (AM2) Advancement Practice Exam (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

Questions

1. **What is the term for authorized maintenance actions during combat that may not fully restore an aircraft's mission capability?**
   - **A. Aircraft Emergency Repair**
   - **B. Aircraft Battle Damage Repair**
   - **C. Flight Safety Maintenance**
   - **D. Combat Readiness Assessment**

2. **What is a "spar" in aircraft structures?**
   - **A. A type of fastener**
   - **B. A primary supporting member for wings**
   - **C. A segment of the fuselage**
   - **D. A form of surface treatment**

3. **What two types of maintenance are performed without distinction as to levels?**
   - **A. Inspection and Repair**
   - **B. Rework and Upkeep**
   - **C. Preventive and Corrective**
   - **D. Preparation and Execution**

4. **What does the term "design life" refer to for aircraft structures?**
   - **A. The lifetime of the aircraft**
   - **B. The expected operational life span of structural components**
   - **C. The duration of flight tests**
   - **D. The time before required maintenance checks**

5. **In what scenario would static loads be most critical to consider in aviation structures?**
   - **A. During unexpected turbulence**
   - **B. When the aircraft is at rest and parked**
   - **C. During take-off and landing**
   - **D. When performing rapid maneuvers**

6. What system provides improved capabilities for managing aircraft guns maintenance and configuration information?

A. AEMIS

B. NALCOMIS

C. ALIMS

D. CM ALS

7. Which center provides coordination for technical data distribution and field engineering assistance for SE?

A. Naval Air Technical Data and Engineering Service Center

B. Naval Supply Systems Command

C. Fleet Readiness Center East

D. Naval Aviation Maintenance Center

8. Explain the function of the ailerons in an aircraft.

A. To control roll about the longitudinal axis

B. To control pitch and altitude

C. To manage landing gear deployment

D. To adjust thrust during flight

9. What is the significance of corrosion control in aircraft maintenance?

A. It improves the visual appearance of the aircraft

B. It ensures safety and longevity of materials

C. It reduces maintenance costs

D. It increases the weight of the aircraft

10. Which instruction assigns responsibilities to COMNAVAIRSYSCOM for various elements of the Non-Destructive Inspection (NDI) program?

A. NAVAIRINST 13070.1

B. NAVSEA 4854.9

C. COMNAVAIRFORINST 13020.1

D. NAVFAC P-437

Answers

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

Explanations

1. What is the term for authorized maintenance actions during combat that may not fully restore an aircraft's mission capability?

A. Aircraft Emergency Repair

B. Aircraft Battle Damage Repair

C. Flight Safety Maintenance

D. Combat Readiness Assessment

The term "Aircraft Battle Damage Repair" is correct because it refers specifically to maintenance actions that are conducted on an aircraft that has sustained damage during combat. These repairs are aimed at ensuring the aircraft can resume basic operational capabilities, even if it does not achieve full mission capability. The focus during these repairs is typically on getting the aircraft back in the air as quickly as possible, rather than performing a complete restoration to pre-damage standards. This type of maintenance is critical in combat situations where timely recovery of aircraft can significantly impact mission success and operational effectiveness. The process often involves rapid assessments and repairs, utilizing available resources to patch up critical systems and structures. In contrast, other options do not accurately describe this specific context. "Aircraft Emergency Repair" generally encompasses temporary fixes in a wider range of emergencies, while "Flight Safety Maintenance" is concerned with ensuring the aircraft is safe to operate regardless of any combat-related context. "Combat Readiness Assessment" refers to the evaluation of an aircraft's ability to perform its intended tasks and is not a maintenance action itself. Thus, Aircraft Battle Damage Repair is specifically designed for the unique challenges faced in combat environments.

2. What is a "spar" in aircraft structures?

A. A type of fastener

B. A primary supporting member for wings

C. A segment of the fuselage

D. A form of surface treatment

A spar is fundamentally a primary supporting member that plays a crucial role in the structure of an aircraft's wings. Its main function is to provide strength and stability, allowing the wing to withstand aerodynamic stresses during flight. The spar runs spanwise along the wing and is designed to carry loads that the wing experiences, including lift, during various phases of flight. In the context of aircraft design, the spar is often constructed from materials that offer a high strength-to-weight ratio, enabling it to effectively support the structural integrity of the wing without adding excessive weight. This is vital for the overall performance and efficiency of the aircraft. Understanding the spar's role helps to clarify why it is a critical component in aviation structures, as it directly influences the safety, functionality, and performance of the aircraft.

3. What two types of maintenance are performed without distinction as to levels?

A. Inspection and Repair

B. Rework and Upkeep

C. Preventive and Corrective

D. Preparation and Execution

The correct answer focuses on the maintenance activities that can be performed without distinguishing between different levels of maintenance. Rework and upkeep represent tasks that are crucial in maintaining equipment but may not vary significantly in their execution processes regardless of the context or specific level. Rework typically involves correcting or redoing work to ensure standards are met, which can apply equally to different levels of maintenance, such as between organizational or intermediate levels. Similarly, upkeep refers to ongoing maintenance activities aimed at preserving equipment functionality and performance, which also do not require a differentiation in levels. In contrast, other choices encompass maintenance types that inherently imply specific levels or functions. For example, inspection is a critical first step that typically aligns with defined maintenance levels, and preventive and corrective maintenance connect directly to the understanding of scheduled versus unscheduled maintenance, which usually denotes methodological differences in execution. Therefore, the emphasis on rework and upkeep as two maintenance types that can be applied across different contexts makes this choice the most accurate in the context given.

4. What does the term "design life" refer to for aircraft structures?

A. The lifetime of the aircraft

B. The expected operational life span of structural components

C. The duration of flight tests

D. The time before required maintenance checks

The term "design life" refers specifically to the expected operational life span of structural components within an aircraft. This is a critical concept in aerospace engineering, as it signifies the duration for which various parts of the aircraft are intended to perform safely and effectively under normal operational conditions. Design life takes into account factors such as material properties, engineering standards, and loads that the structure will encounter during its service. Understanding the design life helps engineers plan maintenance, inspections, and replacements to ensure safety and performance over time. It is a key consideration in the design and development processes to ensure that aircraft can withstand the stresses of operations without structural failure. The other choices, while related to the overall lifecycle and maintenance of an aircraft, do not accurately define "design life" in the context of aircraft structures. The lifetime of the aircraft itself encompasses more than just the design life of its individual components, and the duration of flight tests is focused on proving the design and operational capabilities rather than operational lifespan. Similarly, the time before required maintenance checks pertains to operational procedures rather than the inherent design specifications of structural components.

5. In what scenario would static loads be most critical to consider in aviation structures?

A. During unexpected turbulence

B. When the aircraft is at rest and parked

C. During take-off and landing

D. When performing rapid maneuvers

Static loads are the forces acting on an aircraft structure when it is not in motion, such as when the aircraft is at rest and parked. In this scenario, the weight of the aircraft, including its fuel, payload, and the structural elements themselves, exerts predictable static forces on the airframe and landing gear. Evaluating static loads while the aircraft is stationary is crucial because it allows engineers and mechanics to ensure that the structure can bear these loads without deformation or failure. This is particularly important for safety, as any weaknesses in the structure could be exacerbated when the aircraft begins to move or operate under dynamic conditions. In contrast, dynamic loads, such as those from turbulence, take-off, landing, or rapid maneuvers, introduce additional complexities and variable forces that can affect the integrity of the aircraft. However, when considering static loads, the state of the aircraft at rest provides a key opportunity to assess structural integrity under constant weight, making this scenario particularly critical for safety and maintenance evaluations.

6. What system provides improved capabilities for managing aircraft guns maintenance and configuration information?

A. AEMIS

B. NALCOMIS

C. ALIMS

D. CM ALS

The system that provides improved capabilities for managing aircraft guns maintenance and configuration information is NALCOMIS, which stands for Naval Aviation Logistics Command Management Information System. This system is designed to support the management of various aviation logistics functions, including maintenance management, supply chain coordination, and configuration management. NALCOMIS enables maintainers to access real-time data regarding the aircraft's operational status and maintenance needs. This ensures that any issues related to aircraft guns can be documented, tracked, and managed efficiently. The system allows for better planning and execution of maintenance operations, leading to enhanced weapon system availability and reliability. In contrast, while AEMIS (Aviation Engineering Management Information System) focuses on engineering and technical data, and ALIMS (Aviation Logistics Information Management System) manages logistics activities, neither of these specifically targets the comprehensive maintenance management of aircraft guns as effectively as NALCOMIS. Similarly, CM ALS (Configuration Management Automated Logistics System) deals with configuration management but does not emphasize comprehensive maintenance tracking as NALCOMIS does.

7. Which center provides coordination for technical data distribution and field engineering assistance for SE?

A. Naval Air Technical Data and Engineering Service Center

B. Naval Supply Systems Command

C. Fleet Readiness Center East

D. Naval Aviation Maintenance Center

The Naval Air Technical Data and Engineering Service Center is responsible for coordinating the distribution of technical data and providing field engineering assistance specifically for Support Equipment (SE). This center plays a pivotal role in ensuring that maintenance, repair, and operations are supported by accurate and timely technical documentation. Their mission includes updating technical manuals, supplying engineering support, and managing the flow of data to fleet units, thereby enabling effective use and maintenance of aircraft support equipment. In contrast, the other organizations listed have different focuses: the Naval Supply Systems Command primarily manages logistics and supply chain operations rather than technical data; Fleet Readiness Center East is centered on the maintenance and readiness of fleet aircraft; while the Naval Aviation Maintenance Center handles maintenance-related technical support but does not specifically focus on the distribution of technical data for SE like the first center does. Consequently, the Naval Air Technical Data and Engineering Service Center stands out as the central entity for the coordination of technical data and field engineering assistance related to support equipment.

8. Explain the function of the ailerons in an aircraft.

A. To control roll about the longitudinal axis

B. To control pitch and altitude

C. To manage landing gear deployment

D. To adjust thrust during flight

The ailerons on an aircraft are critical flight control surfaces located on the outer wings that primarily control the roll of the aircraft about its longitudinal axis. When a pilot wants to initiate a turn, they move the control yoke or stick to either side, causing one aileron to deflect upward and the other to deflect downward. The upward-deflecting aileron reduces the lift on that wing, while the downward-deflecting aileron increases lift on the opposite wing, resulting in a rolling motion. This movement is essential for maneuverability during flight, allowing the aircraft to bank and turn efficiently. Understanding the specific role of ailerons clarifies why the other options do not apply. While pitch and altitude are managed primarily by the elevator, which controls the movement about the lateral axis, the other options pertain to unrelated functions such as landing gear deployment and thrust adjustment, which do not involve the ailerons at all. Thus, ailerons are specifically designed for roll control, making that function their primary purpose in flight dynamics.

9. What is the significance of corrosion control in aircraft maintenance?

A. It improves the visual appearance of the aircraft

B. It ensures safety and longevity of materials

C. It reduces maintenance costs

D. It increases the weight of the aircraft

Corrosion control in aircraft maintenance is crucial because it directly impacts the safety and longevity of materials used in aircraft construction. Corrosion can weaken structural components and systems, leading to failure during operations, which poses significant safety risks to both the aircraft and its occupants. By effectively managing and preventing corrosion, maintenance personnel can ensure that the structural integrity of the aircraft remains intact over time. This not only promotes a safe flying environment but also extends the lifespan of materials, thereby enhancing their reliability and performance in various operational conditions. While improving the visual appearance of the aircraft, reducing maintenance costs, and increasing the weight of the aircraft might be considerations in different contexts, they do not encompass the primary and vital role of corrosion control, which is ultimately about maintaining safety and material longevity.

10. Which instruction assigns responsibilities to COMNAVAIRSYSCOM for various elements of the Non-Destructive Inspection (NDI) program?

A. NAVAIRINST 13070.1

B. NAVSEA 4854.9

C. COMNAVAIRFORINST 13020.1

D. NAVFAC P-437

The correct response is rooted in the specific regulations outlined in NAVAIRINST 13070.1. This instruction is essential as it delineates the roles and responsibilities of the Commander, Naval Air Systems Command (COMNAVAIRSYSCOM) concerning the Non-Destructive Inspection (NDI) program. It provides guidance on the implementation, management, and oversight necessary to ensure the effective application of NDI across naval aviation activities. NAVAIRINST 13070.1 has been designed to establish standard procedures and quality assurance measures concerning NDI practices, thereby contributing significantly to safety and operational effectiveness. Understanding this instruction allows aviation structural mechanics to grasp how the NDI program is integrated within the naval aviation structure, ensuring reliable maintenance and inspection protocols are adhered to. Other documents mentioned do not primarily focus on the responsibilities specific to COMNAVAIRSYSCOM regarding the NDI program. Knowing the correct guideline helps in understanding the framework within which aviation maintenance personnel operate and enhances their capability to ensure compliance with necessary safety standards.