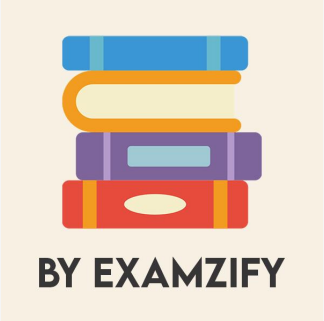
A&P Aviation Mechanic Technician Practice Test (Sample)

Study Guide



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Questions

1. What maintenance record entries are required to contain the aircraft total time in service?

A. Only records of inspections required the total time

B. All maintenance performed on the aircraft

C. All modifications made to the aircraft

D. All flights recorded in the flight log

2. How do you divide one fraction by another?

A. Add the numerators and denominators

B. Invert the divisor and multiply

C. Multiply the denominators and add the numerators

D. Subtract the numerators

3. During a dye penetrant inspection, what process allows the penetrant to enter a crack?

A. Evaporation

B. Capillary action

C. Pressure injection

D. Thermal expansion

4. What is the term that describes the ratio of moisture in the air compared to its maximum capacity?

A. Absolute humidity

B. Relative humidity

C. Specific humidity

D. Saturation point

5. What is the difference between an "allowance" and a "tolerance"?

A. Allowance is a fixed size; tolerance is a variable size

B. Allowance is the minimum size; tolerance is the maximum size

C. Allowance is the difference from the nominal dimension; tolerance is the extreme permissible dimension

D. Allowance and tolerance are interchangeable terms in aviation

6. What precaution should be observed when washing an airplane?

A. Use any detergent available

B. Avoid washing at high pressures

C. Protect sensitive areas like static ports

D. Wash in direct sunlight

7. How is "time-in-service" defined in relation to maintenance record entries?

A. From the time the aircraft departs until it arrives at the next airport

B. From the time the aircraft leaves the ground until it lands at the next point

C. From engine starting until engine shutdown

D. From takeoff until cruising altitude is reached

8. What kind of information can typically be found in the title block of an aircraft drawing?

A. Color scheme of the aircraft

B. Names of all crew members

C. Part name, drawing size, and company name

D. Flight test results

9. Who is ultimately responsible for ensuring the use of the most current information during aircraft maintenance?

A. The aircraft owner

B. The FAA

C. The person performing the maintenance

D. The maintenance supervisor

10. What is one safety procedure to observe when hand-propping a small aircraft engine?

A. Check the fuel system before attempting to start

B. Locate a qualified person in the cockpit

C. Do not swing the prop with your hand

D. Always start the engine from behind

Answers

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

Explanations

1. What maintenance record entries are required to contain the aircraft total time in service?

A. Only records of inspections required the total time

B. All maintenance performed on the aircraft

C. All modifications made to the aircraft

D. All flights recorded in the flight log

The requirement for maintenance record entries to include the aircraft's total time in service is most clearly associated with records of inspections. This is because total time in service is a critical metric often used to assess the airworthiness of an aircraft and to determine when certain inspections and maintenance actions are due. Inspections are mandated at specific intervals based on the total flight hours, and without an accurate time in service entry, it becomes challenging to comply with regulatory requirements and maintain the safety of the aircraft. While maintenance records for modifications and general maintenance could also include time in service information, they are not mandated as explicitly as inspection records. Modifications may sometimes reference time in service for compliance with airworthiness directives, but the primary regulatory focus is on inspections. Flight log entries document usage but do not specifically serve maintenance record purposes in this context.

2. How do you divide one fraction by another?

A. Add the numerators and denominators

B. Invert the divisor and multiply

C. Multiply the denominators and add the numerators

D. Subtract the numerators

To divide one fraction by another, the correct approach is to invert the divisor and multiply. This means if you have a fraction A/B being divided by another fraction C/D, you would rewrite the expression as A/B ÷ C/D. To perform the division, you first take the second fraction, C/D, and flip it upside-down to get D/C. Then, you multiply the first fraction by the inverted second fraction, resulting in A/B × D/C. This method effectively transforms the division of fractions into a multiplication problem, making it easier to solve. This rule arises from the concept of multiplying by the reciprocal, which is a fundamental principle in fraction arithmetic. Understanding this approach allows for accurate calculations when dealing with fractions in various mathematical contexts.

3. During a dye penetrant inspection, what process allows the penetrant to enter a crack?

A. Evaporation

B. Capillary action

C. Pressure injection

D. Thermal expansion

In the context of dye penetrant inspection, capillary action is the fundamental process that enables the penetrant to enter into cracks or voids in the surface of a material. This phenomenon occurs because the surface tension of the liquid penetrant causes it to be drawn into narrow spaces, such as cracks. When a liquid comes into contact with a solid surface, the adhesive forces between the liquid and solid can exceed the cohesive forces within the liquid, causing it to "climb" into the cracks. This property is particularly useful in non-destructive testing because it allows for the detection of very small imperfections that may not be visible to the naked eye. The other options involve processes that do not effectively describe how dye penetrants operate within the context of inspecting for cracks in materials.

4. What is the term that describes the ratio of moisture in the air compared to its maximum capacity?

A. Absolute humidity

B. Relative humidity

C. Specific humidity

D. Saturation point

The term that describes the ratio of moisture in the air compared to its maximum capacity is relative humidity. This concept is essential in understanding atmospheric conditions and weather patterns. Relative humidity is expressed as a percentage and indicates how close the air is to being saturated with water vapor. When relative humidity reaches 100%, the air is fully saturated, and any additional moisture may condense into dew or precipitation. Absolute humidity, in contrast, measures the actual amount of water vapor present in a given volume of air without considering the air's capacity to hold moisture at a given temperature. Specific humidity provides the mass of water vapor relative to the total mass of air, including dry air and water vapor, but does not directly reflect the air's moisture saturation level. The saturation point refers to the condition when air can no longer hold additional moisture and is not a ratio but rather a state of humidity. Understanding relative humidity is crucial in various fields, particularly in aviation, as it affects aircraft performance and atmospheric conditions.

5. What is the difference between an "allowance" and a "tolerance"?

A. Allowance is a fixed size; tolerance is a variable size

B. Allowance is the minimum size; tolerance is the maximum size

C. Allowance is the difference from the nominal dimension; tolerance is the extreme permissible dimension

D. Allowance and tolerance are interchangeable terms in aviation

The distinction between allowance and tolerance is crucial in precision engineering and manufacturing processes, especially in aviation mechanics where exact specifications are vital for safety and performance. Allowance refers to the intentional difference between the minimum material condition of one part and the maximum material condition of another part. It represents a specified fit that aims to ensure proper functionality and is a fixed quantity that is predetermined during the design phase. In this sense, allowance is about defining the necessary gap or interference required between mating parts to achieve the desired fit. On the other hand, tolerance defines the permissible limits of variation in a physical dimension. It encompasses the maximum and minimum sizes that a component can deviate from its nominal measurement without affecting the interchangeability and functionality. Tolerance is essential in ensuring that parts manufactured can fit together reliably and function as intended, even with slight variations in size due to manufacturing processes. This understanding highlights why the correct choice clarifies that allowance is focused on the fixed differences in dimensional fit, while tolerance establishes the range of acceptable variations around a specified dimension, emphasizing the functional performance of components in assembly and operation.

6. What precaution should be observed when washing an airplane?

A. Use any detergent available

B. Avoid washing at high pressures

C. Protect sensitive areas like static ports

D. Wash in direct sunlight

Washing an airplane requires special care to protect sensitive areas, particularly components such as static ports, antennas, and control surfaces. Static ports are critical for accurate airspeed and altitude readings as they measure ambient air pressure. If these ports become blocked or contaminated with soap, water, or debris, it can lead to incorrect instrument readings, which can compromise flight safety. By ensuring that sensitive areas are protected during the wash process, technicians help maintain the aircraft's operational integrity and ensure the safety of the flight crew and passengers. Properly safeguarding these areas is essential to prevent malfunction and to uphold the standards required for aircraft maintenance. While other precautions, like avoiding high-pressure washing and washing in direct sunlight, have their merits, the specific safeguarding of sensitive components stands out as a critical focus for effective aircraft maintenance.

7. How is "time-in-service" defined in relation to maintenance record entries?

A. From the time the aircraft departs until it arrives at the next airport

B. From the time the aircraft leaves the ground until it lands at the next point

C. From engine starting until engine shutdown

D. From takeoff until cruising altitude is reached

"Time-in-service" is defined as the duration that an aircraft is in operation, specifically from the point it leaves the ground until it lands at the next point. This measure is important for maintenance tracking and compliance with maintenance schedules, as it informs technicians about the operational history of the aircraft, aiding in determining when inspections, maintenance, or repairs are needed based on flight hours. In the aviation maintenance context, focusing on when an aircraft is airborne provides a more accurate measure of usage for maintenance purposes. This aligns with regulatory requirements and industry standards that help ensure safety and efficiency. The other statements describe timeframes that do not encompass the full definition of "time-in-service" as required for maintenance records. For instance, defining it only from takeoff until cruising altitude or just from engine start to shutdown does not capture the entire flight duration, which is crucial for tracking operating limits and maintenance schedules effectively.

8. What kind of information can typically be found in the title block of an aircraft drawing?

A. Color scheme of the aircraft

B. Names of all crew members

C. Part name, drawing size, and company name

D. Flight test results

The title block of an aircraft drawing is a critical component that provides essential identification and reference information for the drawing. It typically includes the part name, which identifies the specific component being depicted, allowing anyone reviewing the document to understand exactly what part the drawing refers to. The drawing size is also included, indicating the dimensions of the drawing itself, which is important for proper scaling and reproduction. Additionally, the company name is featured in the title block, providing information about the manufacturer or design organization responsible for the drawing, which is key for tracking and documentation purposes. In contrast, the other options do not belong in a title block. The color scheme of the aircraft is not a fundamental aspect of a drawing's technical specifications and would be addressed elsewhere in design documents. Listing the names of all crew members is not relevant in a technical drawing context; such information appears in other administrative documents. Flight test results are performance data that would be included in a separate report or document focused on operational evaluations, rather than in the drawing itself, which is concentrated on part specifications and technical details.

9. Who is ultimately responsible for ensuring the use of the most current information during aircraft maintenance?

A. The aircraft owner

B. The FAA

C. The person performing the maintenance

D. The maintenance supervisor

The person performing the maintenance holds the primary responsibility for ensuring the use of the most current information during aircraft maintenance. This is because the technician must actively apply up-to-date maintenance procedures, repair manuals, and service bulletins in their work. They are directly involved in the hands-on aspect of maintenance and must stay informed about any updates or changes to procedures that could affect the safety and airworthiness of the aircraft. While other parties, such as aircraft owners or maintenance supervisors, play important roles in overseeing and supporting maintenance operations, it is ultimately the technician's duty to access the latest data, adhere to regulatory requirements, and apply the most current knowledge and methods during maintenance tasks. This responsibility is critical for maintaining safety standards and compliance with Federal Aviation Administration (FAA) regulations.

10. What is one safety procedure to observe when hand-propping a small aircraft engine?

A. Check the fuel system before attempting to start

B. Locate a qualified person in the cockpit

C. Do not swing the prop with your hand

D. Always start the engine from behind

When hand-propping a small aircraft engine, ensuring there is a qualified person in the cockpit is crucial for safety. This individual is responsible for managing the engine's start sequence and can react quickly to any issues that may arise during the process. Their presence ensures that they are prepared to handle the engine controls and can stop the start attempt if anything goes wrong, enhancing overall safety during this potentially hazardous operation. In general, the presence of a qualified person helps in coordinating the hand-propping process, making sure that the operator performing the prop swing is aware when to initiate the action and when to halt it if necessary. This procedure is vital to mitigate the risks involved in starting the engine manually.