

يتكون هذا الاختبار من (100) سؤال موضوعي من نوع الاختيار من متعدد، الإجابة عنها إجبارية. ظلل بقلم الرصاص بشكل غامق الدائرة التي تشير إلى الإجابة الصحيحة في المكان المخصص لذلك في نموذج الإجابة المرفق.

### Aircraft Flight Control Systems & Airworthiness Inpection

1. **Where would you find the recommended statement for recording the approval or disapproval for return to service, after the 100 -hour or annual inspection?**
  - a- 14 CFR Part 65
  - b- 14 CFR Part 91
  - c- 14 CFR Part 39
  - d- 14 CFR Part 43
  
2. **Which statement is correct regarding an aircraft that is found to be unairworthy after an annual inspection, due to an item requiring a major repair (assuming data is used to accomplish the repair)?**
  - a- An appropriately rated mechanic may accomplish the repair, and an IA may approve the aircraft for return to service.
  - b- An appropriately rated mechanic or repair station may repair the defect and approve the aircraft for return to service.
  - c- Only the person who performed the annual inspection may approve the aircraft for return to service, after the major repair.
  - d- The owner of the aircraft.
  
3. **The maximum time a 100-hour inspection may be extended is:**
  - a- 20 hours with a special flight permit.
  - b- 10 hours with a special flight permit.
  - c- 12 hours with a special flight permit.
  - d- 10 hours.
  
4. **An aircraft that is due an annual inspection may be flown:**
  - a- If a special permit has been issued for the aircraft.
  - b- For the purpose of performing maintenance.
  - c- For a period of time not to exceed 10 hours.
  - d- For a period of time that exceed 100 hours.
  
5. **For an individual (not a repair station) to conduct a complete 100-hour inspection on an aircraft and approve it for return to service requires a mechanic certificate with an:**
  - a- Airframe rating only.
  - b- An inspection authorization.
  - c- Airframe and powerplant ratings with an inspection authorization.
  - d- Airframe and powerplant ratings.
  
6. **A decrease in pitch angle of the tail rotor blades on a helicopter:**
  - a- Causes the tail to pivot in the opposite direction of torque rotation around the main rotor axis.
  - b- Causes the tail to pivot in the direction of torque rotation around the main rotor axis.
  - c- Is required to counteract main rotor torque produced by takeoff RPM.
  - d- Decreasing the RPM of the tail rotor.

7. **The purpose in checking main rotor blade tracking is to determine the:**
- a- Relative position of the blades during rotation.
  - b- Flight path of the blades during rotation.
  - c- Extent of an out of balance condition during rotation.
  - d- To check the RPM.
8. **The purpose of wing slats is to:**
- a- Reduce stalling speed.
  - b- Decrease drag.
  - c- Increase speed on takeoff.
  - d- Decrease speed of landing.
9. **The purpose of spring tabs or servo tabs is to:**
- a- Increase drag
  - b- Contribute to the static balance of the control surface.
  - c- Make in-flight trim adjustments possible.
  - d- Assist the pilot in moving the control surfaces.
10. **What is the smallest size cable that may be used in aircraft primary control systems?**
- a- 1/4 inch.
  - b- 5/16 inch.
  - c- 1/8 inch.
  - d- 6/16 inch.
11. **Main rotor blades that do not cone by the same amount during rotation are said to be out of:**
- a- Balance.
  - b- Collective pitch.
  - c- Track.
  - d- Cyclic pitch
12. **One purpose of the freewheeling unit required between the engine and the helicopter transmission is to:**
- a- Automatically disengage the rotor from the engine in case of an engine failure.
  - b- Disconnect the rotor from the engine to relieve the starter load.
  - c- Permit practice of autorotation landings.
  - d- Increasing or decreasing the RPM of the main rotor.
13. **The angle of incidence is that acute angle formed by:**
- a- The angular difference between the setting of the main airfoil and the auxiliary airfoil (horizontal stabilizer) in reference to the longitudinal axis of the aircraft.
  - b- A line parallel to the wing chord and a line parallel to the longitudinal axis of the aircraft.
  - c- A line parallel to the wing from root to tip and a line parallel to the lateral axis of the aircraft.
  - d- A line perpendicular to the wing from root to tip and a line perpendicular to the lateral axis of the aircraft.
14. **What type of flap system increases the wing area and changes the wing camber?**
- a- Fowler flaps.
  - b- Slotted flaps.
  - c- Split flaps.
  - d- Rudder.

**15. The chord of a wing is measured from:**

- a- Wingtip to wingtip.
- b- Wing root to the wingtip.
- c- Leading edge to trailing edge.
- d- Wing root to the leading edge

**16. The angle of incidence of an airplane:**

- a- Affects the dihedral of the wings.
- b- Is that angle between the relative wind and the chord of the wing.
- c- Does not change in flight.
- d- Affects the longitudinal of the plane.

**17. The dihedral angle of a wing may be measured by placing a straight edge and level protractor on the:**

- a- Front spar.
- b- Wing root.
- c- Wing chord.
- d- Trailing edge

**18. When inspecting a control cable turnbuckle for proper installation, determine that:**

- a- No more than four threads are exposed on either side of the turnbuckle barrel.
- b- The terminal end threads are visible through the safety hole in the barrel.
- c- The safety wire ends are wrapped a minimum of four turns around the terminal end shanks.
- d- The safety wire ends are wrapped a minimum of two turns around the terminal end shanks.

**19. The purpose of the vertical Tail is to provide:**

- a- Dihedral stability to the wings.
- b- Longitudinal stability.
- c- Lateral stability.
- d- Directional stability.

**20. How are changes in direction of a control cable accomplished?**

- a- Pulleys.
- b- Bell cranks.
- c- Fairleads.
- d- Balane arm.

**Engine Fuel metering, Induction and Exhaust Systems****21. The purpose of cascade vanes in a thrust reversing system is to:**

- a- Form a solid blocking door in the jet exhaust path.
- b- Turn the exhaust gases forward just after exiting the exhaust nozzle.
- c- Turn to a forward direction the fan and/or hot exhaust gases that have been blocked from exiting through the exhaust nozzle.
- d- Turn the exhaust gases backward.

**22. Thrust reversers utilizing a pneumatic actuating system usually receive operating pressure from:**

- a- The engine bleed air system.
- b- An on board hydraulic or electrical powered compressor.
- c- High pressure air reservoirs.
- d- Fuel control unit.

- 23. What is the purpose of a slip joint in an exhaust collector ring?**
- a- It aids in alignment and absorbs expansion.
  - b- It reduces vibration and increases cooling.
  - c- It permits the collector ring to be installed in one piece.
  - d- It increases vibration and increases cooling
- 24. What type of nuts are used to hold an exhaust system to the cylinders?**
- a- Brass or heat-resistant nuts.
  - b- High-temperature fiber self-locking nuts.
  - c- High-temperature aluminum self-locking nuts.
  - d- Nickel-chromium.
- 25. How do the turbines which are driven by the exhaust gases of a turbo-compound engine contribute to total engine power output?**
- a- By driving the crankshaft through suitable couplings.
  - b- By driving the supercharger, thus relieving the engine of the supercharging load.
  - c- By converting the latent heat energy of the exhaust gases into thrust by collecting and accelerating them.
  - d- By exhaust gases.
- 26. Ball joints in reciprocating engine exhaust systems should be:**
- a- Tight enough to prevent any movement.
  - b- Disassembled and the seals replaced every engine change.
  - c- Loose enough to permit some movement.
  - d- Increases vibration.
- 27. Augmenter tubes are part of which reciprocating engine system?**
- a- Induction.
  - b- Exhaust.
  - c- Fuel.
  - d- Lubrication.
- 28. When trimming a turbine engine, the fuel control is adjusted to:**
- a- Produce as much power as the engine is capable of producing.
  - b- Set idle RPM and maximum speed or EPR.
  - c- Allow the engine to produce maximum RPM without regard to power output.
  - d- Set maximum RPM and minimum speed or EPR.
- 29. A supervisory electronic engine control (EEC) is a system that receives engine operating information and:**
- a- Adjusts a standard hydromechanical fuel control unit to obtain the most effective engine operation.
  - b- Develops the commands to various actuators to control engine parameters.
  - c- Controls engine operation according to ambient temperature, pressure, and humidity.
  - d- Making route around the pump and back to the fuel control unit.

- 30. Generally, the practice when trimming an engine is to:**
- Turn all accessory bleed air off.
  - Turn all accessory bleed air on.
  - Make adjustments (as necessary) for all engines on the same aircraft with accessory bleed air settings the same -- either on or off.
  - Decrease direction.
- 31. On a float-type carburetor, the purpose of the economizer system is to:**
- Provide extra fuel for sudden acceleration of the engine.
  - Maintain the leanest mixture possible during cruising best power.
  - Provide a richer mixture & cooling at maximum power output.
  - Economize on the amount of fuel discharged for all power setting.
- 32. What occurs when a back-suction type mixture control is placed in IDLE CUTOFF?**
- The fuel passages to the main and idle jets will be closed by a valve.
  - The float chamber will be vented to a negative pressure area.
  - The fuel passage to the idle jet will be closed by a valve.
  - The fuel will be cutoff.
- 33. What carburetor component measures the amount of air delivered to the engine?**
- Economizer valve.
  - Automatic mixture control.
  - Venturi.
  - Fuel flowmeter.
- 34. An aircraft carburetor is equipped with a mixture control in order to prevent the mixture from becoming too:**
- Lean at high altitudes.
  - Rich at high altitudes.
  - Rich at high speeds.
  - Rich at high engine RPM
- 35. The device that controls the ratio of the fuel/air mixture to the cylinders is called a:**
- Throttle valve.
  - Accelerator pump
  - Metering jet.
  - Mixture control.
- 36. What is the purpose of the carburetor accelerating system?**
- Supply and regulate the fuel required for engine speeds above idle.
  - Temporarily enrich the mixture when the throttle is suddenly opened.
  - Supply and regulate additional fuel required for engine speeds above cruising.
  - decrease the air density to the carburetor.
- 37. What is the purpose of the rate-of-change controller in a turbocharger system?**
- Limits the maximum manifold pressure that can be produced by the turbocharger at full throttle conditions.
  - Controls the rate at which the turbocharger discharge pressure will increase.
  - Controls the position of the waste gate after the aircraft has reached its critical altitude.
  - A decrease in manifold pressure with a constant RPM
- 38. What directly regulates the speed of a turbocharger?**
- Turbine.
  - The amount of air.
  - Throttle.
  - Waste gate.

**39. The differential pressure controller in a turbocharger system:**

- a- Reduces bootstrapping during part-throttle operation.
- b- Positions the waste gate valve for maximum power.
- c- Provides a constant fuel-to-air ratio.
- d- Maintains constant air velocity at the carburetor inlet.

**40. The purpose of a bellmouth compressor inlet is to:**

- a- Provide an increased ram air effect at low airspeeds.
- b- Maximize the aerodynamic efficiency of the inlet.
- c- Provide an increased pressure drop in the inlet.
- d- Minimize the aerodynamic efficiency of the inlet.

**Engine Lubrication ,Cooling &Fire Protection Systems****41. What is the purpose of an augments used in some reciprocating engine exhaust systems?**

- a- To reduce exhaust back pressure.
- b- To aid in cooling the engine.
- c- To assist in displacing the exhaust gases.
- d- Create a low pressure area aft of the engine.

**42. Where are cooling fins usually located on air-cooled engines?**

- a- Exhaust side of the cylinder head, inside the pistons, and connecting rods.
- b- Cylinder head, cylinder walls, and inside the piston.
- c- Cylinder head, cylinder barrel, and inside the piston.
- d- Exhaust side of the cylinder head, inside the pistons and cylinder walls.

**43. The component(s) in a turbine engine that operate(s) at the highest temperatures is/are the:**

- a- Compressor first stage.
- b- Exhaust cone
- c- Turbine disks.
- d- First stage turbine nozzle guide vanes.

**44. Which of the following defects would likely cause a hot spot on a reciprocating engine cylinder?**

- a- Too much cooling fin area broken off.
- b- A cracked cylinder baffle.
- c- Cowling air seal leakage.
- d- In the bottom of the cylinder.

**45. What part of an air-cooled cylinder assembly has the greatest fin area per square inch?**

- a- Cylinder barrel.
- b- Rear of the cylinder head.
- c- Exhaust valve port.
- d- Intake valve port.

**46. Cylinder head temperatures are measured by means of an indicator and a:**

- a- Variable resistance.
- b- Thermocouple sensing device.
- c- Resistance bulb sensing device
- d- Wheatstone bridge sensing device.

- 47. What is the function of a blast tube as found on aircraft engines?**
- a- A means of cooling the engine by utilizing the propeller backwash.
  - b- A tube used to load a cartridge starter.
  - c- A device to cool an engine accessory.
  - d- A tube used to lubricate the engine accessory
- 48. Reciprocating engines used in helicopters are cooled by:**
- a- The downdraft from the Tail rotor.
  - b- A fan mounted on the engine.
  - c- Blast tubes on either side of the engine mount.
  - d- By heat exchanger with the fuel
- 49. Smoke detectors which use a measurement of light transmissibility in the air are called:**
- a- Electromechanical devices.
  - b- Photoelectrical devices.
  - c- Visual devices.
  - d- Mechanical devices
- 50. Which fire-detection system measures temperature rise compared to a reference temperature?**
- a- Fenwal continuous loop.
  - b- Lindberg continuous element.
  - c- Thermocouple.
  - d- kidde system.
- 51. Light refraction smoke detectors:**
- a- Measure a reduction in the amount of visible or infrared light in the surrounding area.
  - b- Sense light reflected from smoke particles passing through a chamber.
  - c- Use radiation induced ionization to detect the presence of smoke.
  - d- Measure the change in temperature
- 52. The most common cause of false fire warnings in continuous-loop fire-detection systems is:**
- a- Improper routing or clamping of loops.
  - b- Moisture.
  - c- Dents, kinks, or crushed sensor sections.
  - d- Overheating.
- 53. Built-in aircraft fire-extinguishing systems are ordinarily charged with:**
- a- Carbon dioxide and nitrogen.
  - b- Halogenated hydrocarbons and nitrogen
  - c- Sodium bicarbonate and nitrogen.
  - d- Carbon dioxide and sodium bicarbonate
- 54. If a fire-extinguisher cartridge is removed from a discharge valve for any reason, it:**
- a- Must be pressure checked.
  - b- Is recommended that the cartridge be used only on the original discharge valve assembly.
  - c- Cannot be used again.
  - d- Must be checked for contamination.







- 75. If a blade of a particular metal propeller is shortened because of damage to the tip, the remaining blade(s) must be:**
- a- Reset (blade angle) to compensate for the shortened blade.
  - b- Returned to the manufacturer for alteration.
  - c- Reduced to conform with the shortened blade.
  - d- Left as it is (they are).
- 76. What controls the constant-speed range of a constant-speed propeller?**
- a- Engine RPM.
  - b- Angle of climb and descent with accompanying changes in airspeed.
  - c- The mechanical limits in the propeller pitch range.
  - d- The weight of the propeller.
- 77. Where are the high and low pitch stops of a Hamilton Standard constant-speed or two-position counterweight propeller located?**
- a- In the hub and blade assembly.
  - b- In the counterweight assembly.
  - c- In the dome assembly.
  - d- In the root of the propeller.
- 78. The primary purpose of a cuff on a propeller is to**
- a- Distribute anti-icing fluid.
  - b- Strengthen the propeller.
  - c- Increase the flow of cooling air to the engine nacelle.
  - d- Decrease the flow of cooling air to the engine nacelle.
- 79. The purpose of a three-way propeller valve is to**
- a- Direct oil from the engine oil system to the propeller cylinder.
  - b- Direct oil from the engine through the governor to the propeller.
  - c- Permit constant-speed operation of the propeller.
  - d- Direct oil aircraft hydraulic system to the propeller.
- 80. A constant-speed propeller provides maximum efficiency by**
- a- Increasing blade pitch as the aircraft speed decreases.
  - b- Adjusting blade angle for most conditions encountered in flight.
  - c- Increasing the lift coefficient of the blade.
  - d- Decreasing the angle of blade to minimize drag.

#### Aircraft hydraulic and fuel systems

- 81. The purpose of the pressure regulator in a hydraulic system is to:**
- a- Maintain system operating pressure within a predetermined range and to unload the pump.
  - b- Regulate the amount of fluid flow to the actuating cylinders within the system.
  - c- Prevent failure of components or rupture of hydraulic lines under excessive pressure.
  - d- To relief the system from high pressure values.

- 82. Which is a characteristic of petroleum base hydraulic fluid?**
- a- Flammable under normal conditions.
  - b- Compatible to natural rubber seals and packings.
  - c- Non-flammable under all conditions.
  - d- Low ignition point.
- 83. To prevent external and internal leakage in aircraft hydraulic units, the most commonly used type of seal is the:**
- a- O-ring seal.
  - b- Gasket seal.
  - c- Chevron seal.
  - d- Teflon seal.
- 84. Pneumatic systems utilize:**
- a- Return lines.
  - b- Relief valves.
  - c- Diluter valves.
  - d- Pumps.
- 85. Before removing the filler cap of a pressurized hydraulic reservoir:**
- a- Relieve the hydraulic system pressure.
  - b- Actuate several components in the system.
  - c- Relieve the air pressure.
  - d- Check the hydraulic level in the reservoir.
- 86. A hydraulic pump is a constant-displacement type if it:**
- a- Produces an unregulated constant pressure.
  - b- Produces a continuous positive pressure.
  - c- Delivers a uniform rate of fluid flow.
  - d- Has a constant speed.
- 87. Select the valve used in a hydraulic system that directs pressurized fluid to one end of an actuating cylinder and simultaneously directs return fluid to the reservoir from the other end.**
- a- Sequence.
  - b- Shuttle.
  - c- Selector.
  - d- Directional valve.
- 88. The primary purpose of a hydraulic actuating unit is to transform:**
- a- Fluid motion into mechanical pressure and back again.
  - b- Fluid pressure into useful work.
  - c- Energy from one form to another.
  - d- Linear motion into rotational.
- 89. The internal resistance of a fluid which tends to prevent it from flowing is called:**
- a- Volatility.
  - b- Viscosity.
  - c- Acidity.
  - d- Specific gravity.
- 90. Which allows free fluid flow in one direction and no fluid flow in the other direction?**
- a- Check valve.
  - b- Metering piston.
  - c- Shutoff valve.
  - d- Relief valve.
- 91. Pressure is a term used to indicate the force per unit area. Pressure is usually expressed in:**
- a- Newtons per square meter.
  - b- Pounds per inch.
  - c- Pounds per cubic inch.
  - d- Newtons per square inch.
- 92. Aircraft tire pressure should be checked:**
- a- Using only a push on stick-type gauge having 1-pound increments.
  - b- At least once a week or more often.
  - c- As soon as possible after each flight.
  - d- At least every day.

- 93. What is one purpose of a fuel tank vent?**
- To maintain atmospheric pressure.
  - To decrease fuel vapour pressure.
  - To decrease tank internal air pressure.
  - To vent the air out of the tank.
- 94. An aircraft's integral fuel tank is:**
- Usually located in the bottom of the fuselage.
  - A part of the aircraft structure.
  - A self-sealing tank.
  - Located in the stabilizer.
- 95. The primary purpose of an aircraft's fuel jettison system is to quickly achieve a:**
- Lower landing weight.
  - Balanced fuel load.
  - Reduced fire hazard.
  - Higher lift.
- 96. What is the recommended practice for cleaning a fuel tank before welding?**
- Purge the tank with air.
  - Flush the inside of the tank with clean water.
  - Steam clean the tank interior.
  - Flush the inside of the tank with antirust detergent.
- 97. (1) The function of a fuel heater is to protect the engine fuel system from ice formation.**
- (2) An aircraft fuel heater cannot be used to thaw ice in the fuel screen.**
- Regarding the above statements,**
- Only No. 1 is true.
  - Only No. 2 is true.
  - Both No. 1 and No. 2 are true.
  - Both No. 1 and No. 2 are not true.
- 98. Nose gear centering cams are used in many retractable landing gear systems. The primary purpose of the centering device is to:**
- Align the nose wheel prior to touchdown.
  - Engage the nose wheel steering.
  - Center the nose wheel before it enters the wheel well.
  - Align the nose wheel with main gear.
- 99. In brake service work, the term 'bleeding brakes' is the process of :**
- Withdrawing air only from the system.
  - Withdrawing fluid from the system for the purpose of removing air that has entered the system.
  - Replacing small amounts of fluid in reservoir.
  - Air escaping from brakes.
- 100. The pressure source for power brakes is:**
- The main hydraulic system.
  - The power brake reservoir.
  - A master cylinder.
  - Auxiliary hydraulic system.

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