

PRACTICE EXAM 6 SIMULATION

1. In an air/oil oleo strut, energy from a landing impact is absorbed primarily by which action?
 - A. Compression of the steel coil spring inside the piston
 - B. Friction between the torque links and scissors
 - C. Forcing hydraulic fluid through a metering orifice

2. Why does a semimonocoque structure use both a stressed skin and internal members rather than skin alone?
 - A. The members prevent the thin skin from buckling and distribute concentrated loads
 - B. The skin carries no load, so members do all the work
 - C. The members exist only to provide an aerodynamic shape

3. How does an antiskid system increase braking effectiveness?
 - A. It locks the wheels fully for maximum friction
 - B. It increases brake pressure as a wheel decelerates
 - C. It releases brake pressure to a wheel about to skid, then reapplies it

4. Why does a control surface require mass balancing forward of its hinge line?
 - A. To increase the surface's aerodynamic lift
 - B. To keep its center of gravity at or ahead of the hinge line and prevent flutter
 - C. To reduce the control force the pilot must apply

5. How does a vacuum-driven gyroscopic instrument get its rotor spinning?

- A. Engine-driven suction draws air through the instrument, spinning the gyro
- B. An electric motor turns the rotor directly
- C. Bleed air from the turbine compressor drives the rotor

6. Why is the air charge in an oleo strut necessary in addition to the hydraulic fluid?

- A. It filters contaminants from the fluid
- B. It lubricates the metering pin
- C. It acts as the spring, storing energy and returning the strut

7. How does an alternator produce direct current for a DC electrical system?

- A. It generates AC internally and rectifies it to DC with diodes
- B. It generates DC directly through a commutator and brushes
- C. It converts mechanical energy straight into DC without rectification

8. Why does fiber orientation determine a composite laminate's strength?

- A. Resin carries the primary load regardless of fiber direction
- B. Fibers carry load most effectively along their length
- C. Orientation affects only the laminate's color and finish

9. How does a pressurization outflow valve control cabin pressure?

- A. It pumps additional air into the cabin on demand
- B. It cools the incoming bleed air
- C. It modulates the rate at which cabin air escapes

10. Why must a constant-displacement hydraulic pump have a separate pressure regulator?

- A. It cannot generate enough pressure on its own
- B. It delivers a fixed volume per revolution regardless of demand
- C. It automatically varies its output to match demand

11. How does a thermocouple fire detection system distinguish a fire from normal engine heat?

- A. It triggers at a single fixed temperature threshold
- B. It responds to a rapid rate of temperature rise
- C. It detects smoke particles in the airflow

12. Why is the cladding on Alclad aluminum made of nearly pure aluminum rather than the alloy?

- A. Pure aluminum is stronger than the alloy core
- B. Pure aluminum is cheaper to apply than alloy
- C. Pure aluminum resists corrosion and protects the alloy core

13. How does a differential aileron system reduce adverse yaw?

- A. The up-going aileron deflects farther than the down-going aileron
- B. Both ailerons deflect equally in the same direction
- C. The ailerons remain neutral during the turn

14. Why does a vacuum waste system move waste without using much water?

- A. It recirculates a large volume of treated fluid continuously
- B. It relies on gravity from elevated lavatories

C. It uses the cabin-to-outside pressure differential to draw waste

15. How does a check valve maintain one-way flow in a hydraulic system?

A. It meters the flow rate with an adjustable orifice

B. It seats against reverse flow while allowing forward flow

C. It relieves pressure above a set limit

16. Why must aircraft electrical loads be wired in parallel rather than series?

A. Series wiring gives each device full voltage independently

B. Parallel wiring forces the same current through every device

C. Parallel wiring gives each device full voltage and independent operation

17. How does a Fowler flap achieve the greatest lift increase among flap types?

A. It moves aft on tracks, increasing both wing area and camber

B. It deflects only the lower trailing-edge surface

C. It hinges straight down without changing wing area

18. Why is dry nitrogen, rather than shop air, used to inflate many tires and struts?

A. Nitrogen is more compressible and provides better cushioning

B. Nitrogen is cheaper than compressed air

C. Nitrogen avoids introducing moisture that causes corrosion or icing

19. How does a turnbuckle change control cable tension when its barrel is rotated?

- A. It winds the cable around an internal spool
- B. It stretches the cable elastically
- C. Its opposite-hand threads draw both cable ends in or let them out

20. Why does a blocked static port cause the altimeter to read incorrectly?

- A. The altimeter senses ambient pressure through the static system
- B. The altimeter uses ram pressure from the pitot tube
- C. The altimeter is gyroscopically driven and unaffected by static

21. How does a freewheeling unit enable autorotation after engine failure?

- A. It disengages the dead engine so the rotor can turn freely
- B. It increases engine RPM to sustain the rotor
- C. It locks the rotor to the engine for control

22. Why does a continuous-loop fire detector provide better coverage than spot detectors?

- A. It requires no electrical power to operate
- B. It cannot produce false warnings
- C. It senses overheat anywhere along its routed length

23. How does the swashplate transmit control inputs to the spinning rotor blades?

- A. It changes engine RPM to alter blade speed
- B. It stores energy to drive the blades during autorotation
- C. Its rotating half follows the non-rotating half via a bearing, driving the pitch links

24. Why does a fuel tank require a functioning vent?

- A. To admit replacement air as fuel is consumed, preventing a vacuum
- B. To bleed excess fuel pressure during climb
- C. To allow water vapor to condense and exit

25. How does a voltage regulator hold system voltage steady as engine speed varies?

- A. By switching the battery in and out of the circuit
- B. By varying the alternator's field current
- C. By changing the resistance of the main bus

26. Why is a relief hole drilled at the intersection of two bends?

- A. To seat a flush rivet in thin material
- B. To relieve concentrated stress and prevent cracking at the corner
- C. To increase the bend radius beyond the minimum

27. How does a vapor-cycle air conditioning system cool the cabin?

- A. The refrigerant absorbs cabin heat at the evaporator and rejects it at the condenser
- B. It expands bleed air through a turbine to cool it
- C. It passes cabin air over a chemical desiccant

28. Why does a piston engine fail when fueled with turbine (jet) fuel?

- A. Jet fuel burns too cool to start the engine at all
- B. Jet fuel does not combust properly in a spark-ignition piston engine

C. Jet fuel freezes in the carburetor at sea level

29. How does an air-cycle machine cool hot bleed air?

A. It sprays liquid refrigerant into the duct

B. It passes the air over an electric cooling element

C. It expands the air through a turbine, which gives up energy and cools it

30. Why must a split (divided) wheel be fully deflated before disassembly?

A. The inflated tire's force is restrained by the through-bolts and can blow the halves apart

B. Deflation allows the bearings to be repacked first

C. Deflation prevents the brake disc from warping

31. How does bonding help protect an aircraft from lightning effects?

A. By insulating components from one another

B. By providing a low-resistance path that controls current flow

C. By increasing the resistance between metal parts

32. Why does the up-going aileron in a differential system create the intended yaw benefit?

A. It reduces drag on the lowered wing relative to the raised wing

B. It increases lift on the raised wing

C. It locks the rudder in the turn direction

33. How does a sequence valve ensure landing gear operations occur in order?

- A. It directs fluid to the next actuator only after a prior action completes
- B. It relieves over-pressure in the gear circuit
- C. It switches the gear to an emergency air source

34. Why does carbon-fiber dust pose a hazard to avionics?

- A. It increases cooling airflow excessively
- B. It is acidic and corrodes circuit boards
- C. It is electrically conductive and can cause shorts

35. How does a capacitance-type fuel quantity system measure fuel?

- A. By a float that rides on the fuel surface
- B. By weighing the entire tank assembly
- C. By electrically sensing fuel level via probes in the tank

36. Why is the UV-blocking coat critical in a fabric finishing system?

- A. It provides the final decorative color
- B. Ultraviolet light is the primary cause of fabric deterioration
- C. It is the coat that tautens and shrinks the fabric

37. How does a shimmy damper control nose-wheel shimmy?

- A. By locking the nose wheel straight during taxi
- B. By increasing tire pressure automatically
- C. By damping the rapid side-to-side oscillation of the nose gear

38. Why does an accumulator improve hydraulic system performance?

- A. It stores fluid under a gas charge to dampen surges and supplement flow
- B. It filters particulate contamination from the fluid
- C. It sets the system relief pressure

39. How does a negative pressure relief valve protect a pressurized fuselage?

- A. By limiting the maximum positive cabin differential
- B. By preventing outside pressure from exceeding cabin pressure
- C. By dumping all cabin pressure on command

40. Why does a blocked pitot tube affect only the airspeed indicator while the static system is clear?

- A. The altimeter and VSI also use ram pressure
- B. The airspeed indicator is gyroscopically driven
- C. Only the airspeed indicator uses pitot (ram) pressure

41. How does a scarf repair restore a composite laminate's load path?

- A. By concentrating load at a single bonded edge
- B. By tapering the damage so plies bond over a large area and transfer load gradually
- C. By bolting a thick external doubler over the damage

42. Why is a 7×19 cable used where the cable runs over pulleys?

- A. It is stiffer and resists stretching better than 7×7
- B. Its many fine wires make it flexible enough to bend repeatedly without breaking

C. It is solid and cannot fray

43. How does a relief valve protect a hydraulic system from over-pressure?

A. By directing fluid to the critical system first

B. By switching to an alternate source

C. By opening to relieve pressure above a set limit

44. Why must control surface direction be verified as a final rigging check?

A. A reversed control can cause loss of control and has caused fatal accidents

B. It confirms the paint scheme is correct

C. It sets the cable tension to the chart value

45. How does a thermal switch (spot detector) trigger a fire warning?

A. It closes when it reaches a set temperature at its location

B. It detects a rapid rate of temperature rise

C. It senses smoke particles in the airstream

46. Why does a magnesium fire require special handling rather than water?

A. Water dissolves magnesium harmlessly but slowly

B. Water can intensify a magnesium fire and react violently

C. Water cools magnesium too fast and cracks it

47. How does an attitude indicator maintain a stable horizon reference?

- A. Through the gyroscopic rigidity of its spinning rotor
- B. Through gyroscopic precession sensing turn rate
- C. Through pitot-static pressure differentials

48. Why is the boost (auxiliary) fuel pump used on a low-wing aircraft?

- A. It replaces the need for any engine-driven pump
- B. It cools the fuel before it reaches the engine
- C. It provides pressure for starting, takeoff, altitude, and as a backup

49. How does eddy current inspection detect cracks in aluminum?

- A. By magnetizing the part and dusting it with iron particles
- B. By inducing currents whose disruption reveals surface and subsurface flaws
- C. By applying a dye that seeps into surface cracks only

50. Why does an over-driven rivet with a flattened shop head fail to meet standards?

- A. A too-thin shop head no longer provides proper clamping force
- B. A wider head always clamps the sheets more tightly
- C. The manufactured head becomes too tall

51. How does a pressurized aircraft maintain a cabin altitude lower than its flight altitude?

- A. By pumping air in faster than it escapes through the metered outflow
- B. By sealing the cabin completely with no airflow
- C. By cooling the cabin air to increase its density

52. Why must oxygen system components be kept free of oil and grease?

- A. Oil absorbs the oxygen and reduces its purity
- B. Oil or grease in contact with oxygen can ignite or detonate
- C. Oil neutralizes the oxygen's breathable content

53. How does a push-pull control rod differ functionally from a control cable?

- A. A rod can only pull, like a cable
- B. A rod transmits both push and pull through a single rigid member
- C. A rod transmits only rotary motion

54. Why is an aircraft tire's pressure checked when the tire is cool?

- A. Cool tires read artificially low
- B. Heat from operation lowers the indicated pressure
- C. Operation heats the tire and raises pressure, giving a false high reading

55. How does a fuel gascolator help protect the engine?

- A. By pressurizing the fuel for injection
- B. By heating the fuel to prevent vapor lock
- C. By collecting water and sediment at the system's low point for draining

56. Why does a wire bundle need to be routed above fluid lines?

- A. So fluid can lubricate the wiring
- B. So a leak cannot drip onto the wiring and damage insulation

C. So the wiring stays warmer in flight

57. How does a stall warning lift-detector vane sense an impending stall?

A. By measuring the indicated airspeed directly

B. By sensing flap position

C. By responding to the airflow shift as the wing nears its stall angle of attack

58. Why must replacement plies in a composite repair match the original stacking sequence?

A. The repair is engineered to carry load along the original fiber directions

B. The sequence affects only the surface appearance

C. Matching reduces the number of plies required

59. How does a hydraulic system multiply force per Pascal's law?

A. By applying equal pressure to a larger output area

B. By compressing the fluid to increase its energy

C. By heating the fluid to expand it

60. Why does a chip detector warning warrant grounding the aircraft for investigation?

A. It indicates low gearbox oil temperature

B. It indicates excessive rotor RPM

C. It indicates metal particles signaling internal wear or impending failure

61. How does a diluter-demand oxygen regulator conserve oxygen?

- A. It delivers a constant flow regardless of breathing
- B. It mixes cabin air with oxygen and delivers only on inhalation
- C. It vents oxygen continuously through a rebreather bag

62. Why does cable tension change with ambient temperature?

- A. The cable and airframe expand and contract at different rates
- B. Cold air increases the cable's electrical resistance
- C. Temperature alters the cable's tensile strength permanently

63. How does a relief hole improve a part with intersecting bends over time?

- A. By adding stiffness at the corner
- B. By preventing fatigue cracks from forming at the stress concentration
- C. By allowing the part to flex more freely overall

64. Why does a corroded ground connection degrade electrical performance?

- A. It lowers resistance and over-energizes the circuit
- B. It seals out moisture and has no effect
- C. It raises resistance, disrupting the common potential and causing noise

65. How does a collective pitch control change rotor thrust?

- A. By changing the pitch of all blades equally and simultaneously
- B. By changing each blade's pitch individually around the disc
- C. By varying only the tail rotor pitch

66. Why is a fairlead limited to a small cable deflection angle?

- A. A sharp deflection at a fairlead causes excessive friction and wear
- B. A fairlead provides the primary tension adjustment
- C. A fairlead must align the cable perfectly straight only

67. How does a combustion heater's overheat switch protect the aircraft?

- A. By increasing fuel flow as the cabin warms
- B. By shutting the heater down if it exceeds a safe temperature
- C. By regulating cabin pressure during climb

68. Why does a partially clogged hydraulic filter eventually allow unfiltered fluid through?

- A. The element dissolves into the fluid
- B. The pump pressure drops to zero
- C. A bypass valve opens to maintain flow when the element clogs

69. How does a wet-wing (integral) fuel tank store fuel without a separate tank?

- A. A flexible bladder cell is fitted into the wing cavity
- B. The wing structure itself is sealed to contain the fuel
- C. A removable metal tank is bolted into the wing bay

70. Why does a skidding (locked) tire stop an aircraft less effectively than a rolling one?

- A. A locked tire provides less friction than one rolling near the verge of skid
- B. A locked tire provides more friction but damages the runway

C. A locked tire spins faster and overshoots

71. How does a sandwich (core) structure achieve high stiffness at low weight?

- A. The core carries all bending loads while the faces do nothing
- B. Thin strong face sheets are held apart by a light core, like an I-beam
- C. The faces and core act independently of each other

72. Why must the magnetic compass be swung after installing nearby ferrous equipment?

- A. The equipment improves the compass's accuracy automatically
- B. The compass must be recalibrated to a higher temperature range
- C. The new magnetic environment introduces deviation that must be compensated

73. How does a priority valve protect a critical system under low pressure?

- A. By relieving pressure above a set limit
- B. By allowing flow in one direction only
- C. By directing available fluid to the more critical system first

74. Why does the retreating blade of a helicopter rotor produce less lift in forward flight?

- A. It meets the relative airflow at a lower speed than the advancing blade
- B. It is pitched to a lower angle than the advancing blade always
- C. It is shorter than the advancing blade

75. How does a smoke detector commonly used in a cargo compartment sense a fire?

- A. By responding to a rapid temperature rise
- B. By detecting smoke particles, often photoelectrically
- C. By measuring the oxygen depletion in the bay

76. Why must a hydraulic reservoir be checked in the manufacturer's specified configuration?

- A. Actuator positions and accumulator state change the fluid level
- B. The fluid color varies with temperature
- C. The reservoir vents only when the gear is up

77. How does a heated drain mast prevent damage on a transport aircraft?

- A. By pressurizing the waste tank
- B. By recirculating treated fluid through the lavatory
- C. By keeping water drains from freezing and rupturing

78. Why is a continuous-flow oxygen system suitable for passengers but less efficient than diluter-demand?

- A. It delivers a steady flow regardless of breathing, using more oxygen
- B. It mixes cabin air and delivers only on inhalation
- C. It pressurizes the cabin directly

79. How does a turnbuckle remain secure after rigging?

- A. By friction alone once tightened
- B. By being safetied with wire or approved locking clips
- C. By welding the barrel to the cable ends

80. Why does an internal hydraulic leak cause an actuator to drift from position?

- A. Fluid leaks externally and lowers the reservoir level
- B. Fluid bypasses a seal inside the unit, letting the piston move
- C. Air enters through the actuator rod end

81. How does a fuel selector valve contribute to safe fuel management?

- A. By filtering water from the fuel before the engine
- B. By pressurizing the selected tank
- C. By letting the pilot choose which tank feeds the engine

82. Why does a composite cured with too little pressure end up weak?

- A. Excess resin makes it brittle and heavy
- B. Inadequate pressure leaves voids and poor consolidation
- C. Too much pressure crushes the core

83. How does a vacuum system air filter affect gyro performance when clogged?

- A. It increases suction and over-speeds the gyros
- B. It reduces airflow, slowing the vacuum-driven gyros
- C. It has no effect on gyro operation

84. Why is an annual inspection's scope the same as a 100-hour inspection's?

- A. Both are performed only by an IA
- B. Both apply only to aircraft for hire

C. Both cover the entire aircraft per the same defined scope

85. How does a spoiler differ in effect from a flap?

A. A spoiler increases lift while a flap decreases it

B. Both increase lift equally

C. A spoiler disrupts (spoils) lift while a flap increases lift

86. Why does the FAA require answering every test question even when unsure?

A. Defective questions are credited only if an answer was marked, and there is no guessing penalty

B. Blank answers receive partial credit automatically

C. Unanswered questions lower the passing threshold

87. How does a hydraulic actuator convert pressure into useful work?

A. By storing pressure against a gas charge

B. By driving a piston (linear) or motor (rotary) with fluid pressure

C. By filtering contaminants from the fluid

88. Why must a life-limited rotorcraft part be retired at its limit even if it looks serviceable?

A. Appearance is the only valid indicator of remaining life

B. It has a finite fatigue life from high-cycle, high-load operation

C. Retirement is optional until cracks appear

89. How does a pressure-reducing valve serve a hydraulic subsystem?

- A. By relieving over-pressure to the reservoir
- B. By switching to an emergency source
- C. By supplying a lower pressure to a subsystem that requires it

90. Why does an aileron move differentially rather than symmetrically?

- A. To counter adverse yaw by deflecting the up-aileron farther
- B. To increase lift symmetrically across both wings
- C. To lock the controls during cruise flight

91. How does a borescope allow inspection of closed structures?

- A. An optical instrument views inside through a small opening without disassembly
- B. It magnetizes the structure to reveal cracks
- C. It applies penetrant dye to internal surfaces

92. Why does a thermal discharge of a fire bottle eject the red disc rather than the yellow one?

- A. The yellow disc marks normal crew discharge
- B. The red disc indicates an overheat/over-pressure discharge overboard
- C. Both discs eject on any discharge

93. How does a slotted flap delay airflow separation as it extends?

- A. A slot directs high-energy air over the flap's upper surface
- B. It blocks all airflow over the flap
- C. It increases wing area without changing camber

94. Why must a major repair use approved data rather than acceptable data?

- A. Acceptable data is always more conservative than approved data
- B. Approved data is only for minor repairs
- C. Major repairs can appreciably affect airworthiness and require approved data

95. How does a shuttle valve switch a brake system to an emergency source?

- A. It automatically shifts to admit the alternate pressure when normal pressure is lost
- B. It relieves over-pressure to the reservoir
- C. It meters the flow rate to the brakes

96. Why does a composite suffer "barely visible impact damage" that metal would not?

- A. Metal hides damage better than composite
- B. An impact can delaminate the internal plies while leaving the surface nearly unmarked
- C. Composites never sustain internal damage

97. How does an aircraft's static system serve the vertical speed indicator?

- A. The VSI senses the rate of change of static pressure
- B. The VSI uses ram pressure from the pitot tube
- C. The VSI is gyroscopically driven, not pressure-driven

98. Why is the down-and-locked condition shown by three green lights rather than one?

- A. One light per landing gear leg confirms each is down and locked
- B. Green lights indicate gear in transit

C. The number of lights is arbitrary and decorative

99. How does a relief valve in a filter assembly maintain system function when the element clogs?

A. It dissolves the contaminants trapped in the element

B. It bypasses the clogged element so fluid continues to flow, though unfiltered

C. It increases pump output to force fluid through

100. Why must the static and altimeter system be tested in the correct pressure direction?

A. Reverse pressure can drive the instrument mechanisms past their stops and damage them

B. Reverse pressure calibrates the altimeter more precisely

C. Reverse pressure clears blockages from the ports

Answer Key

1. C — An oleo strut absorbs landing energy by forcing hydraulic fluid through a metering orifice, dissipating it as heat. There is no steel coil spring, and torque-link friction is not the energy-absorbing mechanism.

2. A — In a semimonocoque structure the internal members prevent the thin skin from buckling and distribute concentrated loads, while the skin still carries much of the load. The skin is not load-free, and the members do more than provide shape.

3. C — An antiskid system releases brake pressure to a wheel about to skid, then reapplies it, keeping the wheel rolling near the verge of skid where braking is most effective. Locking the wheel reduces braking and damages tires.

4. B — Mass balancing keeps the surface's center of gravity at or ahead of the hinge line, preventing the diverging oscillation called flutter. It is not for adding lift or reducing pilot control force.

5. A — A vacuum-driven gyro is spun by engine-driven suction that draws air through the instrument across the rotor. An electric motor drives electric gyros, and bleed air is not the source for these instruments.

6. C — The compressed air or nitrogen charge acts as the spring, storing energy and returning the strut smoothly, while fluid through the orifice absorbs the impact. It does not filter or lubricate.

7. A — An alternator generates AC internally and rectifies it to DC with diodes for a DC system. A commutator-and-brush design describes a DC generator, and rectification is required for the alternator's output.

8. B — Fibers carry load most effectively along their length, so the orientation of the plies determines laminate strength. Resin holds the fibers in position but does not carry the primary load, and orientation is not merely cosmetic.

9. C — The outflow valve modulates the rate at which cabin air escapes, controlling cabin pressure. It does not pump air in or cool the bleed air.

10. B — A constant-displacement pump delivers a fixed volume per revolution regardless of demand, so a separate pressure regulator is needed to control system pressure. A self-varying pump would not require one.

11. B — A thermocouple system responds to a rapid rate of temperature rise, distinguishing a fire from slow normal heating. A fixed threshold describes a spot detector, and smoke sensing describes a smoke detector.

12. C — The nearly pure aluminum cladding resists corrosion and protects the stronger alloy core. The cladding is softer, not stronger, and its purpose is protection, not cost.

13. A — In a differential aileron system the up-going aileron deflects farther than the down-going one, reducing the drag imbalance that causes adverse yaw. Equal or neutral deflection would not provide the benefit.

14. C — A vacuum waste system uses the cabin-to-outside pressure differential to draw waste to the tank, using little water. It does not recirculate a large fluid volume or rely on gravity.

15. B — A check valve seats against reverse flow while allowing forward flow, maintaining one-way flow. Metering flow rate is an orifice's job and pressure relief is a relief valve's.

16. C — Parallel wiring gives each device full system voltage and independent operation, so one failure does not kill the rest. Series wiring shares current and would not provide independent full-voltage operation.

17. A — A Fowler flap moves aft on tracks, increasing both wing area and camber, producing the greatest lift increase. Deflecting only the lower surface describes a split flap, and hinging straight down describes a plain flap.

18. C — Dry nitrogen avoids introducing moisture that causes corrosion or icing in tires and struts. Nitrogen is not chosen for greater compressibility or lower cost.

19. C — A turnbuckle's opposite-hand (right- and left-hand) threads draw both cable ends in or let them out as the barrel rotates, changing tension. It does not wind the cable on a spool or stretch it elastically.

20. A — The altimeter senses ambient pressure through the static system, so a blocked static port makes it read incorrectly. It does not use ram pressure and is not gyroscopically driven.

21. A — The freewheeling unit disengages the dead engine so the rotor can keep turning freely, enabling autorotation. It does not increase engine RPM or lock the rotor to the engine.

22. C — A continuous-loop detector senses overheat anywhere along its routed length, giving broad coverage spot detectors cannot. It does require power and can produce false warnings if damaged.

23. C — The swashplate's rotating half follows the non-rotating half through a bearing and drives the blade pitch links, transmitting control inputs to the spinning blades. It does not change engine RPM or store energy.

24. A — A fuel tank vent admits replacement air as fuel is consumed, preventing a vacuum that would choke off flow or collapse the tank. It does not relieve pressure only on climb or condense water vapor.

25. B — A voltage regulator holds system voltage steady by varying the alternator's field current as engine speed and load change. It does not switch the battery in and out or change bus resistance.

26. B — A relief hole relieves the concentrated stress at intersecting bends, preventing cracking at the corner. Seating a flush rivet is a dimple's or countersink's job, not a relief hole's.

27. A — In a vapor-cycle system the refrigerant absorbs cabin heat at the evaporator and rejects it overboard at the condenser. Expanding bleed air describes an air-cycle system, and desiccant describes moisture removal.

28. B — Jet fuel does not combust properly in a spark-ignition piston engine, causing failure. It is not that the fuel is too cool to start or that it freezes at sea level.

29. C — An air-cycle machine expands hot bleed air through a turbine, which gives up energy as it does work and cools the air. There is no liquid refrigerant or electric cooling element in the air-cycle process.

30. A — A split wheel must be fully deflated before disassembly because the inflated tire's force is restrained by the through-bolts and can blow the halves apart. Deflation is not about bearings or disc warping.

31. B — Bonding provides a low-resistance path that controls current flow, helping protect against lightning effects and static. It connects rather than insulates metal parts and lowers, not raises, resistance.

32. A — The up-going aileron reduces drag on the lowered wing relative to the raised wing, countering adverse yaw. It does not increase lift on the raised wing or lock the rudder.

33. A — A sequence valve directs fluid to the next actuator only after a prior action completes, ensuring operations occur in order such as doors before gear. It is not an over-pressure or emergency-source device.

34. C — Carbon-fiber dust is electrically conductive and can short avionics if it settles in the bay. It does not aid cooling and is not acidic.

35. C — A capacitance-type fuel quantity system electrically senses fuel level via probes in the tank, more accurately than a float. It does not use a float or weigh the tank.

36. B — Ultraviolet light is the primary cause of fabric deterioration, so the UV-blocking coat is critical protection. It is not the color coat or the tautening agent.

37. C — A shimmy damper damps the rapid side-to-side oscillation of the nose gear. It does not lock the wheel straight or adjust tire pressure.

38. A — An accumulator stores fluid under a gas charge to dampen surges and supplement flow, improving performance and providing a reserve. It does not filter contaminants or set relief pressure.

39. B — A negative pressure relief valve prevents outside pressure from exceeding cabin pressure during a rapid descent, protecting the structure from being squeezed inward. Limiting positive differential and dumping pressure are other valves' jobs.

40. C — Only the airspeed indicator uses pitot (ram) pressure, so a blocked pitot tube with a clear static system affects only the ASI. The altimeter and VSI use static pressure and remain normal.

41. B — A scarf repair tapers the damage so replacement plies bond over a large area and transfer load gradually into the parent laminate. Concentrating load at one edge or bolting a thick doubler does not restore the original load path as smoothly.

42. B — A 7×19 cable's many fine wires make it flexible enough to bend repeatedly over pulleys without breaking. It is more flexible, not stiffer, than 7×7 and is not solid.

43. C — A relief valve opens to relieve pressure above a set limit, protecting against over-pressure. Prioritizing a critical system and switching sources are other valves' functions.

44. A — Verifying control direction is the final rigging check because a reversed control can cause loss of control and has caused fatal accidents. It is unrelated to paint or to setting cable tension.

45. A — A thermal switch (spot detector) closes when it reaches a set temperature at its location, triggering the warning. Rate-of-rise sensing describes a thermocouple, and smoke sensing describes a smoke detector.

46. B — Water can intensify a magnesium fire and react violently, so magnesium requires special handling. The hazard is the reaction with water, not slow dissolution or cracking from cooling.

47. A — The attitude indicator maintains a stable horizon reference through the gyroscopic rigidity of its spinning rotor. Precession is used by the turn instruments, and the attitude indicator is not pressure-driven.

48. C — The boost (auxiliary) pump on a low-wing aircraft provides pressure for starting, takeoff, altitude, and as a backup to the engine-driven pump. It does not replace the engine-driven pump or cool the fuel.

49. B — Eddy current inspection induces currents in the part whose disruption reveals surface and subsurface flaws, and it works on conductive aluminum. Magnetizing/dusting describes magnetic particle, and dye describes penetrant.

50. A — An over-driven rivet with a too-thin shop head no longer provides proper clamping force and must be replaced. A wider, flatter head is not "tighter," and the manufactured head does not grow taller.

51. A — A pressurized aircraft pumps air in faster than it escapes through the metered outflow valve, raising cabin pressure to maintain a lower cabin altitude. It is not fully sealed and does not rely on cooling for pressure.

52. B — Oil or grease in contact with high-concentration oxygen can ignite or detonate, so oxygen components must be kept free of petroleum products. Oil does not absorb or neutralize oxygen.

53. B — A push-pull control rod transmits both push and pull through a single rigid member, eliminating the opposing cable. A cable can only pull, and a rod transmits linear, not purely rotary, motion.

54. C — Operation heats the tire and raises pressure, so checking when cool avoids a false high reading. Cool tires do not read artificially low, and heat raises rather than lowers pressure.

55. C — The gascolator collects water and sediment at the system's low point for draining, protecting the engine from contamination. It does not pressurize or heat the fuel.

56. B — Wiring is routed above fluid lines so a leak cannot drip onto it and damage the insulation. It is not for lubrication or warmth.

57. C — A lift-detector vane responds to the airflow shift as the wing nears its stall angle of attack, lifting and closing a switch to warn the pilot. It senses angle of attack, not airspeed or flap position directly.

58. A — Replacement plies must match the original stacking sequence because the repair carries load along the original fiber directions. The sequence is not merely cosmetic and does not reduce the ply count.

59. A — Per Pascal's law, a hydraulic system multiplies force by applying equal pressure to a larger output area. The fluid is essentially incompressible, and force multiplication does not come from compressing or heating it.

60. C — A chip detector warning indicates metal particles signaling internal wear or impending failure, warranting investigation before further flight. It does not indicate oil temperature or rotor RPM.

61. B — A diluter-demand regulator mixes cabin air with oxygen and delivers it only on inhalation, conserving oxygen. Constant flow and continuous rebreather delivery describe continuous-flow systems.

62. A — Cable tension changes with temperature because the cable and airframe expand and contract at different rates. Temperature does not change the cable's electrical resistance relevantly or permanently alter its strength.

63. B — A relief hole prevents fatigue cracks from forming at the stress concentration where bends intersect. It does not add stiffness or make the part flex more freely overall.

64. C — A corroded ground raises resistance, disrupting the common electrical potential and causing noise and erratic instruments. It does not lower resistance or leave performance unaffected.

65. A — The collective changes the pitch of all rotor blades equally and simultaneously, controlling total thrust. Changing pitch individually around the disc describes the cyclic, and tail-rotor pitch is the pedals' domain.

66. A — A fairlead is limited to a small deflection angle because a sharp deflection causes excessive friction and wear on the cable. A fairlead does not adjust tension and need not align the cable perfectly straight.

67. B — A combustion heater's overheat switch shuts the heater down if it exceeds a safe temperature, a critical safety function. It does not increase fuel flow or control cabin pressure.

68. C — A bypass valve opens to maintain flow when the filter element clogs, allowing unfiltered fluid through until the element is serviced. The element does not dissolve, and pump pressure does not drop to zero.

69. B — A wet-wing (integral) tank seals the wing structure itself to contain the fuel, with no separate tank. A bladder cell or a removable metal tank describes other tank types.

70. A — A locked, skidding tire provides less friction than one rolling near the verge of skid, so it stops the aircraft less effectively. It does not provide more friction or overshoot by spinning faster.

71. B — A sandwich structure holds thin, strong face sheets apart with a light core, like an I-beam, achieving high stiffness at low weight. The faces carry bending and the core carries shear; they act together, not independently.

72. C — Installing ferrous equipment changes the magnetic environment, introducing deviation that must be compensated by swinging the compass. The equipment does not improve accuracy, and the issue is magnetic, not temperature range.

73. C — A priority valve directs available fluid to the more critical system first under low pressure. Relieving pressure and one-way flow are other valves' functions.

74. A — The retreating blade meets the relative airflow at a lower speed than the advancing blade, producing less lift, which is the cause of dissymmetry of lift. It is not always pitched lower or physically shorter.

75. B — A cargo-compartment smoke detector senses smoke particles, often photoelectrically. It does not rely on temperature rise or oxygen-depletion measurement as its primary method.

76. A — A hydraulic reservoir must be checked in the manufacturer's specified configuration because actuator positions and accumulator state change the fluid level. Fluid color and vent behavior do not set the check configuration.

77. C — A heated drain mast keeps water drains from freezing and rupturing on a transport aircraft. It does not pressurize the waste tank or recirculate lavatory fluid.

78. A — A continuous-flow oxygen system delivers a steady flow regardless of breathing, using more oxygen and thus less efficient than diluter-demand. Delivering only on inhalation describes diluter-demand, and it does not pressurize the cabin.

79. B — A turnbuckle is secured after rigging by safetying it with wire or approved locking clips, preventing the barrel from unscrewing. Friction alone is insufficient, and welding is not used.

80. B — An internal leak lets fluid bypass a seal inside the unit, allowing the piston to drift from position. An external leak lowers the reservoir level visibly, and air entering the rod end is a different issue.

81. C — A fuel selector valve lets the pilot choose which tank feeds the engine, central to fuel management. It does not filter water or pressurize the tank.

82. B — Inadequate cure pressure leaves voids and poor consolidation, making the composite weak. Excess resin (brittle/heavy) and crushed core describe different problems.

83. B — A clogged vacuum filter reduces airflow, slowing the vacuum-driven gyros and degrading their indications. It does not increase suction or have no effect.

84. C — The annual and 100-hour inspections cover the entire aircraft per the same defined scope (Part 43 Appendix D). The 100-hour does not require an IA and is not limited to aircraft for hire.

85. C — A spoiler disrupts (spoils) lift, while a flap increases lift; they have opposite effects. They do not both increase lift, nor does a spoiler increase lift.

86. A — Defective questions are credited only if an answer was marked, and there is no guessing penalty, so every question should be answered. Blank answers do not earn partial credit and do not lower the threshold.

87. B — A hydraulic actuator converts pressure into work by driving a piston for linear motion or a motor for rotary motion. Storing pressure is the accumulator's role and filtering is the filter's.

88. B — A life-limited rotorcraft part has a finite fatigue life from high-cycle, high-load operation, so it must be retired at its limit regardless of appearance. Appearance is not the valid indicator, and retirement is not optional.

89. C — A pressure-reducing valve supplies a lower pressure to a subsystem that requires it. Relieving over-pressure and switching to an emergency source are other valves' functions.

90. A — An aileron moves differentially to counter adverse yaw by deflecting the up-aileron farther than the down-aileron. It does not increase lift symmetrically or lock the controls.

91. A — A borescope is an optical instrument that views inside closed structures through a small opening without disassembly. It does not magnetize the structure or apply penetrant dye internally.

92. B — The red disc indicates an overheat/over-pressure (thermal) discharge overboard, while the yellow disc marks a normal crew discharge. The two discs do not both eject on any discharge.

93. A — A slotted flap opens a slot that directs high-energy air over the flap's upper surface, delaying separation. It does not block airflow or increase area without changing camber.

94. C — A major repair can appreciably affect airworthiness and therefore requires approved data, while acceptable data suffices only for minor work. Approved data is not limited to minor repairs, and it is not merely "more conservative."

95. A — A shuttle valve automatically shifts to admit the alternate pressure when normal pressure is lost, switching a brake system to its emergency source. It does not relieve pressure or meter flow rate.

96. B — A composite can suffer barely visible impact damage where an impact delaminates the internal plies while leaving the surface nearly unmarked. Metal does not hide damage better, and composites do sustain internal damage.

97. A — The VSI senses the rate of change of static pressure to show climb or descent rate. It does not use ram pressure and is not gyroscopically driven.

98. A — Three green lights provide one light per landing gear leg, each confirming that leg is down and locked. Green does not indicate in-transit, and the count is not arbitrary.

99. B — A filter relief (bypass) valve bypasses the clogged element so fluid continues to flow, though unfiltered, until the element is serviced. It does not dissolve contaminants or increase pump output.

100. A — Reverse pressure during a static/altimeter test can drive the instrument mechanisms past their stops and damage them, so the correct direction must be used. Reverse pressure does not calibrate or clear blockages..