PRACTICE EXAM 9 SIMULATION

1. A mechanic discovers that a previous repair added significant weight behind a control surface's hinge line and the surface was never re-balanced. During high-speed flight, what is the most serious potential consequence?

A. Increased adverse yaw during turns

B. A gradual loss of trim authority only

C. Destructive flutter of the control surface

2. An aircraft has flown for two months since its altimeter and static system check expired. The aircraft is operated IFR. What is its status?

A. Airworthy for IFR, since the check is advisory

B. Airworthy for VFR and IFR without restriction

C. Not airworthy for IFR until the check is current

3. A composite repair was cured at a lower temperature than specified because the heat blanket controller failed mid-cycle. What is the most likely result?

A. A resin-rich, overly heavy laminate

B. An under-cured laminate that is weak and may fail under load

C. A laminate stronger than the original

4. A piston-engine aircraft loses power shortly after takeoff. Investigation reveals the fuel was drawn from a truck shared with turbine aircraft. What is the most probable cause?

A. Misfueling with turbine fuel

B. A minor octane shortfall causing roughness

C. Normal post-maintenance engine behavior

5. A retractable-gear aircraft retracts its gear while still on the ground during a maintenance run. Which failed component most directly allowed this?

A. The downlock spring

B. The squat (safety) switch

C. The gear position indicator bulb

6. A mechanic notices the attitude and heading indicators are both unreliable, but the electric turn coordinator is normal and the suction gauge reads low. What is the common root cause?

A. A discharged main battery

B. A failed vacuum pump or clogged vacuum filter

C. A blocked pitot tube

7. A hydraulic actuator slowly drifts from its set position with no external fluid loss. What does this indicate, and where is the fault?

A. Internal leakage past a seal inside the actuator or valve

B. An external leak at the rod-end fitting

C. Air trapped in the reservoir vent

8. A pressurized aircraft's structure shows fatigue cracking concentrated around door and window frames. Which operational factor most contributes to this?

A. Excessive control surface flutter

B. Vibration from the landing gear

C. Repeated pressurization and depressurization cycles

9. A mechanic finds a nickel-cadmium battery hot to the touch with rising charge current. If uncorrected, what is the dangerous end state?

A. Thermal runaway leading to cell rupture or fire

B. Slow sulfation reducing capacity

C. Electrolyte freezing and case cracking

10. A control cable shows broken wires concentrated where it rides over a pulley. What is the underlying reason broken wires gather there, and the correct action?

A. The cable stretches there; re-tension and continue

B. Repeated flexing there fatigues wires; replace the cable

C. Corrosion only occurs there; lubricate and continue

11. A mechanic adds Skydrol to a system that uses mineral-base fluid. The system works initially but fails days later. What explains the delayed failure?

A. Skydrol has a lower boiling point that took time to manifest

B. The added fluid slowly evaporated

C. Cross-contamination gradually deteriorated the incompatible seals

12. A bleed-air duct develops a leak near a wire bundle and a flight-control cable. Beyond burns, what compounded hazard does this create?

A. Heat damage to surrounding wiring and structure

B. Excessive cabin humidity only

C. Cooling of the surrounding structure

13. A mechanic must decide whether a dent in a wing skin is airworthy. The skin is primary structure at a wing-fuselage attach area. What governs the decision?

A. The manufacturer's structural repair manual for that area

B. A general rule that all dents are negligible

C. The mechanic's visual judgment alone

14. A pilot reports the airspeed indicator over-reads at altitude. The static system checks clear, but the pitot drain is found partially blocked. What is the mechanism of the error?

A. The static port governs the airspeed reading

B. The VSI bleeds into the pitot line

C. A partially blocked pitot system distorts the ram pressure the ASI senses

15. A mechanic working a composite repair near an avionics bay leaves carbon dust uncontained. What downstream failure could result?

A. Improved avionics cooling

B. Electrical shorts from conductive dust entering equipment

C. No effect, since the dust is inert

16. An oleo strut bottoms out hard on landing despite appearing properly extended on the ground. What condition could produce this?

A. The strut is low on fluid though adequately charged with air

B. The tire is over-inflated

C. The brake linings are worn

17. A mechanic must select an NDI method to find a subsurface crack in an aluminum spar fitting. Which choice is correct, and why is one method ruled out?

A. Eddy current or ultrasonic; magnetic particle won't work on aluminum

B. Magnetic particle; it works on all metals

C. Visual only; subsurface cracks always surface

18. A fire bottle reads good pressure, but the discharge cartridge is past its service-life date. In an emergency, what is the risk?

A. The bottle will over-pressurize and burst

B. The cartridge may fail to fire, leaving the agent undischarged

C. There is no risk, since pressure proves function

19. A heading indicator drifts off the magnetic compass over time on a vacuum-gyro aircraft. The drift is excessive. What does this point to, distinct from normal precession?

A. A blocked static port

B. A normal condition needing no action

C. Low vacuum or a clogged vacuum filter

20. A wire bundle chafes against a moving control cable. Which two distinct failures could result?

A. Only a cosmetic change to the wire

B. Only a slight increase in resistance

C. Electrical arcing/fire and fouling of the control cable

21. A mechanic finds spongy brakes after replacing a caliper, with no external leaks. What was most likely introduced, and what corrects it?

A. A warped disc; replace the disc

B. Air during service; bleed the brakes

C. Worn linings; replace the linings

22. A blocked fuel tank vent is suspected after an engine quit in cruise with ample fuel. What chain of events caused the power loss?

A. A vacuum formed as fuel was drawn out, choking off fuel flow

B. The tank over-pressurized and flooded the engine

C. Water entered through the cap and contaminated the fuel

23. A mechanic over-torques a hydraulic fitting to stop a weep, and the leak worsens. Why did over-tightening backfire?

A. It cracked the flare or distorted the fitting, creating a real leak

B. It improved the seal but reduced pressure

C. It had no effect on the leak

24. A helicopter develops a high-frequency vibration in flight. Which source is most consistent with the frequency?

A. A main rotor blade out of track

B. The landing skids

C. The tail rotor or other high-speed components

25. A mechanic must disposition a wooden spar with faint lines running across the grain. What is the defect and the required action?

A. An acceptable surface check; seal it

B. A normal grain deviation; return to service

C. A compression failure; reject the member

26. A pilot reports the VSI shows zero in a climb and the altimeter is stuck. What single failure explains both, and which instrument is least affected?

A. A blocked static system; the pitot-fed airspeed is least affected

B. A failed attitude gyro; the VSI is least affected

C. A blocked pitot tube; the altimeter is least affected

27. A mechanic finds an antenna was relocated and re-mounted without approved data. What two categories of problem could this create?

A. Only improved reception with no downside

B. Degraded radio performance and possible structural or sealing issues

C. Only a change in the aircraft's paint scheme

28. A transport's lavatory area shows water staining under the floor. Months later, corrosion is found in the underlying structure. What was the root cause?

A. Excessive cabin pressurization

B. Persistent water leakage attacking hidden structure

C. Normal condensation requiring no action

29. A mechanic must service a low oleo strut. Adding air alone makes it stand up, but it bottoms out on the next landing. What was the real deficiency?

A. The tire pressure was low

B. The brake system needed bleeding

C. The strut was low on fluid, which air cannot replace

30. A circuit breaker has been reset repeatedly to keep a system running, and wiring near it is now warm. What hazard has been created?

A. The breaker rating increased automatically

B. The system is now better protected

C. Overheated wiring that could ignite a fire

31. A mechanic finds the static ports were waxed over during detailing. The aircraft is dispatched. What instruments will mislead the crew?

A. The altimeter, airspeed indicator, and VSI

B. Only the airspeed indicator

C. Only the attitude indicator

32. A composite scarf repair was laid up with the plies at the wrong orientation, though the correct number of plies was used. Why is the repair still unairworthy?

A. The surface color does not match

B. Too many plies were installed

C. Fibers carry load along their length, so wrong angles won't carry the design load

33. A pilot reports yaw control problems on a single-main-rotor helicopter, with a grinding feel in the pedals. Which system and component chain should the mechanic suspect?

A. The collective and its servo

B. The tail rotor drive shaft, gearbox, and antitorque controls

C. The main rotor swashplate bearing

34. A mechanic finds a control surface rigged so it moves opposite the pilot's input. What is the gravest risk, and when does it typically arise?

A. Excessive control force; during taxi

B. Loss of control; often after maintenance that disconnected the system

C. Mild trim error; only at cruise

35. A nickel-cadmium and a lead-acid battery were serviced with the same tools. What is the likely consequence?

A. Cross-contamination that can destroy a battery

B. Improved performance from mixed electrolyte

C. No effect, since electrolytes are compatible

36. A mechanic must classify a repair that could appreciably affect structural strength and flight characteristics. What follows for data and documentation?

A. Acceptable data and a logbook note suffice

B. Approved data and FAA Form 337 are required

C. No documentation is needed

37. A pilot reports fluctuating fuel pressure and roughness climbing on a hot day. What condition fits, and what aggravates it?

A. Water contamination aggravated by full tanks

B. Vapor lock aggravated by heat in the fuel lines

C. A static blockage aggravated by altitude

38. A mechanic finds magnesium grindings smoldering and reaches for a water hose. Why must this be stopped immediately?

A. Water can intensify a magnesium fire and react violently

B. Water wastes time but is otherwise safe

C. Water cracks the magnesium part from rapid cooling

39. A helicopter's transmission chip light illuminates and the mechanic finds metal on the detector. What does this signify and require?

A. Low oil temperature; top off the oil

B. Internal wear or impending failure; ground and investigate before flight

C. Excessive rotor RPM; reduce power

40. A pilot reports the gear warning horn does not sound when power is reduced with the gear up. What latent accident does this enable, and why is correction urgent?

A. A taxi collision, since the horn is only for taxi

B. Nothing, since the horn is unrelated to gear

C. An unintended gear-up landing, since the warning is silent

41. A mechanic finds an aircraft load wired in series so all devices fail when one fails. Why is this contrary to aircraft electrical design?

A. Series gives each device full independent voltage

B. Series is required for all warning circuits

C. Loads should be parallel so each gets full voltage and operates independently

42. A mechanic must verify oleo strut inflation and finds the piston extended far less than the manufacturer's figure for the aircraft's weight. What does this indicate?

A. The strut is over-inflated and must be fully deflated

B. The strut is low on air, fluid, or both

C. The tire is over-pressurized

43. A pilot reports radio interference and erratic instruments. A corroded bonding/ground point is found. How does this produce the symptoms?

A. It lowers resistance and stabilizes the circuit

B. It seals out moisture with no electrical effect

C. It raises resistance, disrupting the common potential and causing noise

44. A mechanic must select fuel for an aircraft placarded 100LL but only finds straw-colored fuel in a truck. What does the color tell the mechanic, and what is the action?

A. It is the correct 100LL; proceed

B. It is a higher avgas grade; use it freely

C. It is likely turbine fuel; do not use it and verify the correct grade

45. A pressurized cabin will not hold pressure. The mechanic traces the fault to a component that meters escaping air. Which component is it?

A. The outflow valve

B. The negative pressure relief valve

C. The cabin dump valve

46. A mechanic finds a tire with a sidewall bulge. What does this most likely indicate about the tire's internal condition, and what is the action?

A. Normal flexing; no action

B. Ply separation in the carcass; replace the tire

C. Over-inflation; bleed air to correct

47. A composite panel struck by a dropped tool shows no surface damage. Why can the mechanic not clear it on visual inspection alone?

A. Surface marks always appear within days

B. Serious internal delamination can hide beneath an intact surface

C. Composites never sustain hidden damage

48. A mechanic must determine the consequence of a clogged hydraulic filter whose bypass valve has opened. What is now happening in the system?

A. The system has lost all pressure

B. The element dissolved into the fluid

C. Unfiltered fluid is circulating until the element is replaced

49. A pilot reports the brakes feel firm then fade during a long taxi, and the fluid is discolored. What chain of conditions does this suggest?

A. Air in the lines requiring only bleeding

B. A normal hydraulic brake characteristic

C. Overheated brakes with possibly degraded fluid

50. A mechanic finds a fuel selector placard faded to illegibility. What accident chain does this create if uncorrected?

A. A mis-selected source leading to fuel starvation

B. Only a cosmetic blemish on the panel

C. Improved fuel economy from guessing the tank

51. A mechanic must verify thread engagement on a control rod end. A safety wire passes freely through the inspection hole. What does this mean?

A. The joint is correctly safetied

B. Thread engagement is adequate

C. Thread engagement is insufficient and the joint is unsafe

52. A helicopter exhibits a once-per-revolution vertical vibration in the main rotor. What is the most likely cause, and how is it corrected?

A. A balance problem corrected with weights

B. A blade out of track corrected via pitch links or trim tabs

C. A tail rotor fault corrected by drive-shaft replacement

53. A mechanic must enter an integral fuel tank for a sealant repair. What governs the procedure and why?

A. Standard coveralls, to avoid staining

B. No special procedure, since it is part of the wing

C. Confined-space entry, due to toxic, explosive vapors and limited oxygen

54. A pilot reports the cabin altitude exceeded the aircraft's actual altitude during a rapid descent, and a valve relieved the condition. Which valve acted, and what did it protect against?

A. The negative pressure relief valve, protecting against outside pressure exceeding cabin pressure

B. The positive relief valve, protecting against excess differential

C. The dump valve, protecting against an outflow valve failure

55. A mechanic finds a wheel bearing that is pitted and discolored from heat. What does this indicate about the bearing, and what is the action?

A. Normal wear; repack and reinstall

B. Heat damage rendering it unserviceable; replace it

C. Cosmetic discoloration; reinstall as-is

56. A mechanic must document a major alteration. What is required, and why does a logbook note alone fail?

A. FAA Form 337 with approved data, because major work requires approved data

B. A logbook note with acceptable data, which is sufficient

C. No documentation, since alterations are exempt

57. A pilot reports the stall warning never activated before a low-speed event. Ground testing shows the horn silent near the stall configuration. What failed, and what is the consequence?

A. The vane switch, wiring, or horn failed, removing the pilot's stall warning

B. Nothing; the system only works in flight

C. The horn is merely too quiet and needs no repair

58. A mechanic finds that a fabric covering has lost strength to about 70% of the originally required value. What is the correct disposition?

A. Apply more dope to restore strength

B. Return it to service, since fading is cosmetic

C. Replace the fabric, as it is deteriorated below limits

59. A mechanic must service an oxygen system and notices a greasy fitting. Why must the work halt immediately?

A. Grease in contact with oxygen can ignite or detonate

B. Grease improves the fitting's seal

C. Grease only affects the oxygen's odor

60. A pilot reports the three green gear lights are dark, though the gear is confirmed down by a mirror check. Among the simplest causes, what should be examined first?

A. The hydraulic accumulator pre-charge

B. Bulbs, the press-to-test circuit, and position-switch wiring

C. The emergency blow-down bottle pressure

61. A mechanic finds wiring routed beneath a fluid line that occasionally drips. What is the risk, and the correct fix?

A. No risk; fluid does not affect insulation

B. Wrap the fluid line around the wiring for support

C. Insulation damage and arcing; route wiring above the fluid line

62. A mechanic must verify the correct interval for the IFR altimeter and static system inspection. What is it, and what shares the interval?

A. 24 calendar months, shared with the transponder check

B. 12 calendar months, shared with the annual

C. 6 calendar months, shared with no other check

63. A helicopter loses engine power and the freewheeling unit fails to disengage the dead engine. What capability is lost, and what is the consequence?

A. Cyclic authority, causing a roll

B. Collective range, limiting climb

C. Autorotation, preventing a controlled power-off landing

64. A mechanic finds carbon-fiber dust inside an avionics bay during a nearby composite repair. Why is this a genuine electrical hazard, not just housekeeping?

A. The dust raises humidity in the bay

B. The dust is electrically conductive and can short equipment

C. The dust improves cooling and is beneficial

65. A mechanic must classify a control cable with broken wires beyond the allowable limit over a pulley. What is the disposition, and why is repair not an option?

A. Lubricate it, since wear is normal

B. Reverse it end-for-end to relocate the wear

C. Replace it, as broken wires beyond limits make it unairworthy

66. A pilot reports the compass swings wildly when a tablet is placed on the glareshield. What does this reveal about the compass, and the corrective principle?

A. Magnetic/electrical influences cause deviation; keep such items away and compensate

B. The compass is defective and must be scrapped

C. The static system is leaking and must be tested

67. A mechanic must select the NDI method for a surface crack in a steel landing gear fitting. Which is appropriate, and why does it suit the material?

A. Dye penetrant, which detects subsurface flaws

B. Magnetic particle, which works on ferromagnetic steel

C. A vacuum decay test, which finds surface cracks

68. A mechanic finds an over-driven rivet whose shop head is too flat and below minimum height. What is the consequence, and the action?

A. Lost clamping force; remove and replace the rivet

B. Improved clamping; leave it in place

C. No effect; seal over the head

69. A pilot reports sluggish vacuum-driven gyros and a low suction reading, while electric instruments are normal. What is the most likely fault chain?

A. A failing vacuum pump or clogged filter reducing airflow to the gyros

B. A discharged battery affecting all instruments

C. A blocked pitot tube affecting the gyros

70. A mechanic must verify a fuel quantity gauge's accuracy. It reads slightly above empty when usable fuel is exhausted. Is this correct, and why?

A. No; it should read empty only when bone-dry

B. No; the gauge is always inaccurate near empty

C. Yes; it is calibrated to read empty at the unusable fuel level

71. A mechanic finds an aircraft battery being charged in a sealed, unventilated cabinet. What hazard does this create?

A. Accumulation of explosive hydrogen gas

B. Improved charge efficiency with no risk

C. Electrolyte freezing from poor ventilation

72. A pilot reports a low-frequency lateral vibration in the helicopter. What does the combination of frequency and direction indicate?

A. A tail rotor tracking problem

B. A main rotor balance problem

C. An engine torsional vibration

73. A mechanic must determine the correct disposition of an applicable, overdue Airworthiness Directive. What is the aircraft's status, and what must occur?

A. Unairworthy until the AD is complied with and recorded

B. Airworthy until the next annual inspection

C. Airworthy because recurring ADs are advisory

74. A composite repair laid up resin-starved cures with too little resin. Why is the result weaker than a correct laminate?

A. Excess resin made it brittle and heavy

B. The fibers became over-supported

C. Too little resin leaves the fibers unsupported with voids

75. A mechanic finds a continuous-loop fire detector chafing against a bracket. What two opposite failures could result?

A. Only improved sensitivity from exposure

B. Only a change in element color

C. A false warning or a failure to warn of real fire

76. A mechanic must select hydraulic fluid for a Skydrol system but has mineral-base fluid on hand. What is correct, and what happens if the wrong fluid is used?

A. Use only Skydrol; mineral-base would destroy the seals

B. Use the mineral-base, since both are red

C. Mix the two to extend the supply

77. A pilot reports the airspeed indicator alone reads incorrectly while the altimeter and VSI are normal. Where is the fault, and why is it isolated to one instrument?

A. The static port, which feeds all three

B. The Kollsman setting, which affects altitude

C. The pitot system, because only the ASI uses pitot pressure

78. A mechanic must determine which records transfer with a sold aircraft. Which set is correct, and why are routine entries excluded?

A. Only last month's oil-change entries, which are permanent

B. The mechanic's private notes, which are official records

C. Total time, life-limited part status, and AD compliance, the permanent airworthiness history

79. A mechanic over-torques window mounting fasteners on an acrylic windshield. What will result in service, and why?

A. The acrylic builds internal stress and cracks or crazes

B. The window seals better with no downside

C. The acrylic becomes more impact resistant

80. A mechanic finds a fixed fire bottle with its red thermal disc missing. What event does this record, and how does it differ from a yellow disc?

A. A normal crew discharge; the red disc marks normal use

B. No discharge; the red disc is decorative

C. An overheat discharge overboard; the yellow disc marks normal crew discharge

81. A mechanic must route a new wire bundle near both a heat source and a fluid line. Which combined practice is correct?

A. Route through the hot area and below the fluid line

B. Wrap the bundle around the fluid line for support

C. Keep clear of the heat and route above the fluid line

82. A pilot reports erratic, noisy hydraulic actuator operation. Which combination of causes best fits the symptom?

A. Air in the system or contamination causing a sticking valve

B. A perfectly bled, contamination-free system

C. Correctly set relief pressure and clean fluid

83. A mechanic must verify a fuel system after an engine quit with fuel aboard. The vent is found blocked. How did the blockage cause starvation?

A. A vacuum formed that prevented fuel from flowing

B. The tank over-pressurized and flooded the carburetor

C. Water entered and displaced the fuel

84. A mechanic finds an exhaust shroud crack on a piston aircraft's heater muff. What cabin hazard does this create, and how is it detected?

A. Refrigerant leakage detected by smell

B. Carbon monoxide intrusion, often detected by a CO detector or symptoms

C. Excess fuel vapor detected by a fuel gauge

85. A mechanic must verify control surface travel after rigging. How is it measured, and against what?

A. By eye against a painted reference

B. To the full extent the stops allow

C. In degrees with a protractor against the manual's limits

86. A mechanic finds a wire's insulation worn through where it crosses a bracket edge. What is the correct action, and what is the risk of leaving it?

A. Replace or repair the wire and correct routing; otherwise arcing and fire

B. Tape over it and continue, since it still conducts

C. Leave it, since worn insulation is cosmetic

87. A pilot reports the cabin overheats and a combustion heater runs continuously. Which safety device should have limited this, and what does it do?

A. The outflow valve, which vents cabin air

B. The overheat (limit) switch, which shuts the heater down at excess temperature

C. The pressure controller, which schedules cabin altitude

88. A mechanic must determine why a constant-displacement gear pump needs a separate pressure regulator. What is the underlying reason?

A. It cannot generate adequate pressure

B. It delivers a fixed volume per revolution regardless of demand

C. It automatically varies output to demand

89. A mechanic finds an oleo strut piston with scoring and corrosion on the exposed chrome. Why is this significant for the seals?

A. The damaged surface will cut or wear the strut seals, causing leaks

B. Scoring improves the seal contact

C. Corrosion has no effect on the seals

90. A pilot reports the heading indicator must be reset to the compass frequently. For a vacuum gyro, what is normal and what is excessive?

A. No resetting is ever required on a serviceable gyro

B. Some precession drift is normal; excessive drift signals low vacuum or a dirty filter

C. Any drift means the static system is blocked

91. A mechanic must select a fastener for a joint accessible from only one side, and the structure is primary. What applies?

A. A standard solid rivet, installed from both sides

B. A blind rivet, but only if approved for that primary structure

C. Any blind rivet, since access dictates the choice alone

92. A pilot reports the gear will not retract during a ground run but cycles normally on jacks. What is functioning as designed, and what does it protect against?

A. The squat (safety) switch, protecting against accidental ground retraction

B. The blow-down bottle, protecting against normal-system failure

C. The pressurization controller, protecting cabin altitude

93. A mechanic must service brakes on a system specifying mineral-base fluid but finds phosphate-ester on hand. What is correct, and what is the danger of substitution?

A. Use only the specified mineral-base fluid; substitution destroys incompatible seals

B. Use the phosphate-ester, since both are hydraulic fluids

C. Mix them to extend the available supply

94. A composite face sheet is found separated from its honeycomb core. What is the defect called, and why does it degrade the structure?

A. Coning; it changes the airfoil shape

B. A disbond; the faces and core no longer act as one stiff unit

C. A relief-hole failure; it weakens the fasteners

95. A mechanic must determine the consequence of a skidding, locked tire under heavy braking. Why does it stop the aircraft less effectively?

A. A locked tire provides more friction but blows out

B. A locked tire provides less friction than one rolling near the verge of skid

C. A locked tire has no effect on stopping distance

96. A mechanic finds a hydraulic line leaking under pressure and prepares to tighten the fitting. Why must the system be depressurized first?

A. A high-pressure leak can inject fluid through the skin, a medical emergency

B. Depressurizing improves the torque accuracy

C. The leak will stop on its own once pressurized

97. A pilot reports a spongy brake pedal after a brake component was replaced. What was most likely introduced, and how is it removed?

A. A warped disc removed by replacement

B. Air introduced during service, removed by bleeding

C. Worn linings removed by replacement

98. A mechanic must verify a transponder's inspection currency for IFR operation. What interval applies, and what happens if it is expired?

A. 12 months; the aircraft remains IFR-legal

B. 24 months; expiration makes it not current for the required check

C. 6 months; expiration has no effect

99. A mechanic finds an aircraft that is not airworthy during an inspection. What is the correct documentation, and what must never be done?

A. Sign the airworthiness statement to permit a ferry flight

B. Record nothing and return the aircraft to the owner

C. Record the inspection and provide a signed discrepancy list, never falsely certifying airworthiness

100. A mechanic must determine why aviator's breathing oxygen, not industrial oxygen, is required. What is the specific concern at altitude?

A. Industrial oxygen burns hotter and damages regulators

B. Industrial oxygen's moisture can freeze and block the system at altitude

C. Industrial oxygen is not breathable at any altitude

Answer Key

1. C — Weight added behind the hinge line shifts the surface's center of gravity aft, making it prone to destructive flutter at high speed. Flutter can tear the surface or structure apart in seconds, which is why re-balancing after such a repair is mandatory.

2. C — An aircraft with an expired altimeter/static check is not airworthy for IFR until the check is made current, since that inspection is a regulatory requirement, not advisory. It cannot legally be operated under IFR in this condition.

3. B — Curing below the specified temperature leaves the resin under-cured, producing a weak laminate full of voids that may fail under load. Inadequate cure does not create a resin-rich or stronger-than-original laminate.

4. A — Power loss shortly after takeoff following fueling from a turbine-shared truck strongly indicates misfueling with jet fuel, which a piston engine cannot burn properly. It is not a minor octane shortfall or normal behavior.

5. B — The squat (safety) switch normally inhibits retraction when weight is on the wheels, so its failure most directly allows on-ground retraction. A downlock spring or indicator bulb would not cause unintended retraction.

6. B — Sluggish vacuum-driven attitude and heading indicators with a low suction gauge, while the electric turn coordinator works, point to a failing vacuum pump or clogged filter. A common vacuum fault affects only the vacuum gyros.

7. A — An actuator that drifts with no external fluid loss indicates internal leakage past a seal inside the actuator or valve. An external leak would show visible fluid, and reservoir vent air is a different issue.

8. C — Fatigue cracking around door and window frames on a pressurized aircraft results from repeated pressurization and depressurization cycles, which stress the pressure vessel. Flutter and gear vibration are not the primary driver.

9. A — A nickel-cadmium battery that grows hotter while drawing more current is heading toward thermal runaway, a self-feeding cycle that can rupture cells or start a fire. Sulfation and freezing are different, slower conditions.

10. B — Broken wires gather over pulleys because repeated flexing there fatigues the wires; the cable must be replaced once broken wires exceed limits. Re-tensioning or lubricating does not restore an unairworthy cable.

11. C — Adding Skydrol to a mineral-base system causes cross-contamination that gradually deteriorates incompatible seals, explaining the delayed failure. It is not about boiling point or evaporation.

12. A — A bleed-air leak near wiring and a control cable causes heat damage to surrounding wiring and structure, compounding the burn hazard. It does not merely raise humidity or cool the structure.

13. A — Whether a dent in primary structure at an attach area is airworthy is governed by the manufacturer's structural repair manual for that area. A general rule or visual judgment alone is not authoritative.

14. C — A partially blocked pitot system distorts the ram pressure the airspeed indicator senses, producing errors such as over-reading at altitude. The static port and VSI do not govern the ASI's ram input.

15. B — Uncontained carbon dust can enter avionics and cause electrical shorts, because it is electrically conductive. It does not improve cooling and is not inert to electronics.

16. A — A strut that bottoms out despite looking extended can be low on fluid while still holding an air charge, since air alone cannot absorb the load properly. Tire pressure and brake wear do not cause bottoming.

17. A — Eddy current or ultrasonic inspection detects subsurface cracks in aluminum, while magnetic particle is ruled out because aluminum is non-magnetic. Visual won't find subsurface cracks.

18. B — An expired discharge cartridge may fail to fire, leaving the agent undischarged even with good bottle pressure. Pressure alone does not prove the bottle will discharge.

19. C — Excessive heading-indicator drift beyond normal precession points to low vacuum or a clogged vacuum filter. A blocked static port is unrelated, and some drift is normal but not excessive drift.

20. C — A wire bundle chafing a moving control cable can both arc and start a fire and foul the control cable, two distinct failures. It is far more than a cosmetic or minor-resistance change.

21. B — Spongy brakes after a caliper replacement with no external leaks indicate air introduced during service, corrected by bleeding. A warped disc or worn linings produce different symptoms.

22. A — A blocked vent prevents air from replacing consumed fuel, forming a vacuum that chokes off fuel flow and starves the engine. It does not over-pressurize the tank or admit water through the cap.

23. A — Over-torquing a fitting can crack the flare or distort the fitting, turning a weep into a real leak. It does not improve the seal or have no effect.

24. C — High-frequency vibration is consistent with the tail rotor or other high-speed components. A main-rotor track problem produces low frequency, and skids are not a rotating source.

25. C — Faint lines across the grain are a compression failure, requiring rejection because the member has been overstressed. It is not an acceptable check or normal grain deviation.

26. A — A blocked static system explains a frozen altimeter and a VSI reading zero in a climb, with the pitot-fed airspeed least affected. A pitot blockage would instead affect only airspeed.

27. B — Relocating an antenna without approved data can degrade radio performance and create structural or sealing problems. It does not simply improve reception or change only the paint scheme.

28. B — Persistent lavatory water leakage attacking hidden structure is the root cause of the later corrosion, since fluids collect and corrode out of sight. It is not pressurization or normal condensation.

29. C — A strut that bottoms out after air-only servicing was actually low on fluid, which air cannot replace for load absorption. The tire and brakes are unrelated to bottoming.

30. C — Repeatedly resetting a breaker against a fault overheats the wiring, which could ignite a fire. The breaker rating does not increase, and the system is not better protected.

31. A — Waxed-over static ports cause the altimeter, airspeed indicator, and VSI to mislead the crew, because all three depend on static pressure. A pitot blockage would affect only airspeed.

32. C — Wrong ply orientation makes a scarf repair unairworthy because fibers carry load along their length, so wrong angles won't carry the design load, even with the correct ply count. Color and ply count are not the issue.

33. B — Yaw problems with a grinding pedal feel on a single-main-rotor helicopter implicate the tail rotor drive shaft, gearbox, and antitorque controls. The collective servo and main-rotor swashplate are not the yaw chain.

34. B — A reversed control's gravest risk is loss of control, and it typically arises after maintenance that disconnected and reconnected the control system. It is not a mild trim error or excessive force.

35. A — Servicing lead-acid and nickel-cadmium batteries with the same tools cross-contaminates and can destroy a battery, because their electrolytes are chemically opposite. It does not improve performance.

36. B — A repair affecting structural strength and flight characteristics is major, requiring approved data and FAA Form 337. Acceptable data and a logbook note are insufficient.

37. B — Fluctuating fuel pressure and roughness climbing on a hot day fit vapor lock, aggravated by heat in the fuel lines. Water contamination and static blockage produce different symptoms.

38. A — Water can intensify a magnesium fire and react violently, so reaching for a water hose must be stopped immediately. The hazard is the reaction with water, not lost time or cracking from cooling.

39. B — Metal on a transmission chip detector signifies internal wear or impending failure, requiring grounding and investigation before flight. It does not indicate oil temperature or rotor RPM.

40. C — A silent gear warning horn enables an unintended gear-up landing, so correction is urgent. The horn is tied to gear position and approach power, not merely taxi.

41. C — Aircraft loads should be parallel so each gets full voltage and operates independently; series wiring causes the cascade failure described. Series does not provide independent full voltage and is not required for warning circuits.

42. B — A piston extended far less than the manufacturer's figure indicates the strut is low on air, fluid, or both. It is not over-inflated, and the tire is not the issue.

43. C — A corroded bonding/ground point raises resistance, disrupting the common potential and causing radio noise and erratic instruments. It does not lower resistance or leave performance unaffected.

44. C — Straw-colored fuel where 100LL (blue) is required is likely turbine fuel, so the mechanic must not use it and must verify the correct grade. It is neither correct 100LL nor a higher avgas grade.

45. A — The outflow valve meters the escaping cabin air to control pressure, so a fault there can prevent the cabin from holding pressure. The negative relief and dump valves are protective/emergency functions.

46. B — A sidewall bulge indicates ply separation in the carcass, requiring tire replacement. It is not normal flexing or simple over-inflation.

47. B — A composite struck with no surface mark cannot be cleared visually because serious internal delamination can hide beneath an intact surface. Surface marks do not always appear later, and composites do sustain hidden damage.

48. C — When a filter's bypass valve opens, unfiltered fluid circulates until the element is replaced. The system has not lost all pressure, and the element does not dissolve.

49. C — Brakes that fade during a long taxi with discolored fluid suggest overheated brakes with possibly degraded fluid. Air in the lines causes sponginess, not progressive fade with discoloration.

50. A — An illegible fuel selector placard can lead to a mis-selected source and fuel starvation. It is not merely cosmetic, and guessing the tank does not improve economy.

51. C — A safety wire passing freely through the rod-end inspection hole means thread engagement is insufficient and the joint is unsafe. It does not indicate adequate engagement or correct safetying.

52. B — A once-per-revolution vertical vibration is a blade out of track, corrected via pitch links or trim tabs. A balance problem produces lateral vibration, and a tail-rotor fault produces high frequency.

53. C — Integral fuel tank entry is governed by confined-space procedures because of toxic, explosive vapors and limited oxygen. Coveralls alone are inadequate, and it is never "no special procedure."

54. A — The negative pressure relief valve acted, protecting against outside pressure exceeding cabin pressure during the rapid descent. The positive relief and dump valves serve different functions.

55. B — A pitted, heat-discolored bearing is heat-damaged and unserviceable, so it must be replaced. Repacking or reinstalling a damaged bearing is unsafe.

56. A — A major alteration requires FAA Form 337 with approved data, because major work requires approved data. A logbook note with acceptable data is insufficient.

57. A — A stall warning silent during a proper ground test means the vane switch, wiring, or horn failed, removing the pilot's warning. The system is testable on the ground and cannot be dismissed as too quiet.

58. C — Fabric that has lost strength to about 70% of the originally required value is deteriorated below limits and must be replaced. Adding dope does not restore strength, and the issue is not cosmetic.

59. A — A greasy fitting on an oxygen system requires halting work because grease in contact with oxygen can ignite or detonate. Grease does not improve the seal or merely affect odor.

60. B — With the gear confirmed down but the lights dark, the simplest causes—bulbs, press-to-test, and position-switch wiring—are examined first. The accumulator and blow-down bottle relate to actuation, not indication.

61. C — Wiring beneath a dripping fluid line risks insulation damage and arcing, so it must be routed above the fluid line. Leaving it or wrapping the line around it is improper.

62. A — The IFR altimeter and static system inspection is required within the preceding 24 calendar months, shared with the transponder check. It is not a 12- or 6-month interval.

63. C — If the freewheeling unit fails to disengage a dead engine, autorotation is lost, preventing a controlled power-off landing. Cyclic and collective authority are not provided by the freewheeling unit.

64. B — Carbon-fiber dust in an avionics bay is a genuine hazard because it is electrically conductive and can short equipment. It does not raise humidity meaningfully or aid cooling.

65. C — A control cable with broken wires beyond limits is unairworthy and must be replaced; repair is not an option because the structural integrity is compromised. Lubricating or reversing it does not restore airworthiness.

66. A — A compass that swings near a tablet reveals that magnetic and electrical influences cause deviation; the principle is to keep such items away and compensate the compass. It is not defective, and the static system is unrelated.

67. B — Magnetic particle inspection suits a surface crack in ferromagnetic steel. Dye penetrant finds only surface-open flaws (not subsurface), and a vacuum decay test checks for leaks.

68. A — An over-driven rivet with a too-flat shop head has lost clamping force and must be removed and replaced. A flatter head is not "tighter," and sealant does not restore the clamp.

69. A — Sluggish vacuum gyros with low suction, while electric instruments are normal, point to a failing vacuum pump or clogged filter reducing airflow. A discharged battery or pitot blockage would not specifically slow the vacuum gyros.

70. C — A gauge reading slightly above empty when usable fuel is exhausted is correct, because it is calibrated to read empty at the unusable fuel level. It is not meant to read empty only when bone-dry.

71. A — Charging a battery in a sealed, unventilated cabinet allows explosive hydrogen gas to accumulate. It does not improve efficiency safely or cause freezing.

72. B — Low frequency points to the main rotor and lateral direction points to balance, so the combination indicates a main rotor balance problem. A tail-rotor issue would be high frequency.

73. A — An applicable, overdue AD makes the aircraft unairworthy until it is complied with and recorded. It is not airworthy until the next annual, and recurring ADs are mandatory.

74. C — A resin-starved laminate is weaker because too little resin leaves the fibers unsupported with voids. Excess resin (brittle/heavy) and over-supported fibers describe different conditions.

75. C — A chafing continuous-loop detector can cause a false warning or a failure to warn of real fire, two opposite failures. Chafing degrades reliability rather than improving sensitivity, and the concern is function, not color.

76. A — A Skydrol system must use only Skydrol; mineral-base fluid would destroy the seals and could cause failure. Color similarity does not make them interchangeable, and mixing is never acceptable.

77. C — When only the airspeed indicator reads incorrectly, the fault is in the pitot system, because only the ASI uses pitot pressure. A static or Kollsman issue would affect other indications.

78. C — The permanent records that transfer with a sold aircraft are total time, life-limited part status, and AD compliance—the airworthiness history. Routine entries may be discarded after a year, and private notes are not official records.

79. A — Over-torqued window fasteners build internal stress in the acrylic, causing it to crack or craze in service, because the plastic cannot expand freely. It does not seal better or become more impact resistant.

80. C — A missing red thermal disc records an overheat discharge overboard, distinct from the yellow disc that marks a normal crew discharge. The red disc is not decorative and does not indicate normal use.

81. C — Routing a new bundle correctly means keeping clear of the heat and routing above the fluid line, protecting the insulation from heat and drips. Routing through the hot area or wrapping the fluid line is improper.

82. A — Erratic, noisy actuator operation fits air in the system or contamination causing a sticking valve. A clean, well-bled system with correct relief pressure would not produce such symptoms.

83. A — A blocked vent forms a vacuum that prevents fuel from flowing, starving the engine even with fuel aboard. It does not over-pressurize the tank or admit water.

84. B — A cracked heater-muff exhaust shroud allows carbon monoxide intrusion into the cabin, often detected by a CO detector or by crew symptoms. It is not refrigerant or excess fuel vapor.

85. C — Control surface travel is measured in degrees with a protractor against the manual's limits. Eyeballing or setting it to the stops for "maximum authority" is incorrect.

86. A — Insulation worn through at a bracket edge requires replacing or repairing the wire and correcting the routing; leaving it risks arcing and fire. Taping over it or ignoring it is unsafe.

87. B — The overheat (limit) switch should have shut the combustion heater down at excess temperature, a critical safety function. The outflow valve and pressure controller govern pressurization, not heater overheat.

88. B — A constant-displacement gear pump needs a separate pressure regulator because it delivers a fixed volume per revolution regardless of demand, so pressure would otherwise keep rising. It does generate adequate pressure and does not self-regulate.

89. A — Scoring and corrosion on the exposed oleo piston will cut or wear the strut seals, causing leaks, because the seals ride on that surface. Damage does not improve the seal or have no effect.

90. B — Some precession drift is normal in a vacuum-driven heading indicator, requiring periodic resetting; excessive drift signals low vacuum or a dirty filter. It is not caused by a static blockage, and some resetting is expected.

91. B — For one-side-only access on primary structure, a blind rivet may be used but only if approved for that primary structure, since blind rivets are not a universal substitute for solid rivets in primary structure. Access alone does not authorize any blind rivet.

92. A — Gear that won't retract on the ground but cycles on jacks shows the squat (safety) switch protecting against accidental ground retraction. The blow-down bottle and pressurization controller are unrelated.

93. A — A system specifying mineral-base fluid must use only that fluid; substituting phosphate-ester would destroy incompatible seals. Both being "hydraulic fluids" does not make them interchangeable, and mixing is never acceptable.

94. B — A face sheet separated from its core is a disbond, degrading the structure because the faces and core no longer act as one stiff unit. It is not coning or a relief-hole failure.

95. B — 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 no effect.

96. A — A high-pressure leak can inject fluid through the skin, a medical emergency, so the system must be depressurized before tightening. Depressurizing is not about torque accuracy, and the leak will not stop on its own.

97. B — A spongy pedal after a brake component replacement most likely came from air introduced during service, removed by bleeding. A warped disc or worn linings produce different symptoms.

98. B — The transponder check interval is 24 calendar months, and expiration makes it not current for the required check. It is not a 12- or 6-month interval, and expiration is not without effect.

99. C — An aircraft found not airworthy is handled by recording the inspection and providing a signed discrepancy list, and the mechanic must never falsely certify airworthiness. Signing a false statement or recording nothing is prohibited.

100. B — Aviator's breathing oxygen is required because industrial oxygen's moisture can freeze and block the system at altitude. The concern is moisture, not hotter burning or non-breathability.