

PRACTICE EXAM 5 SIMULATION

1. A mechanic measures a control surface throw. The manufacturer specifies travel limits in which unit?
 - A. Inches of cable movement only
 - B. Pounds of control force
 - C. Degrees of deflection

2. Aircraft tire pressure should be checked under which condition for an accurate reading?
 - A. Immediately after a hard landing
 - B. Only at maximum gross weight
 - C. When the tires are cool

3. Which aluminum alloy series uses zinc as its major alloying element and includes the high-strength 7075?
 - A. The 2xxx series
 - B. The 7xxx series
 - C. The 3xxx series

4. A 24-volt load draws 8 amps. What is its resistance?
 - A. 3 ohms
 - B. 192 ohms
 - C. 0.33 ohms

5. Which control cable construction has 7 strands of 19 wires each and is the most flexible?

- A. 1 × 19 cable
- B. 7 × 7 cable
- C. 7 × 19 cable

6. Which inspection interval applies to the IFR transponder check?

- A. 12 calendar months
- B. 24 calendar months
- C. 6 calendar months

7. A composite repair must reproduce which characteristics of the original laminate?

- A. Color and surface texture only
- B. Resin brand regardless of fiber type
- C. Ply count, fiber type, and orientation

8. Which fluid color identifies mineral-base hydraulic fluid (MIL-PRF-5606)?

- A. Red
- B. Purple
- C. Blue

9. For a 1/8-inch-diameter rivet (0.125 in), what is the minimum edge distance at 2D?

- A. 0.125 inch
- B. 0.5 inch
- C. 0.25 inch

10. Which device stores hydraulic fluid under a gas charge to dampen pressure surges and provide an emergency reserve?

- A. A relief valve
- B. An accumulator
- C. A pressure regulator

11. The annual inspection must be performed by whom?

- A. A mechanic holding an Inspection Authorization
- B. Any certificated A&P mechanic
- C. The aircraft owner if pilot-rated

12. Which gyroscopic property does the turn coordinator use to sense rate of turn?

- A. Rigidity in space
- B. Precession
- C. Coning

13. Which valve in a hydraulic system allows flow in one direction only?

- A. A sequence valve
- B. A check valve
- C. A relief valve

14. A 100-hour inspection may be performed by which person?

- A. Only an Inspection Authorization holder
- B. Only the manufacturer

C. An appropriately rated A&P mechanic

15. Which extinguishing agent application floods an enclosed engine zone with gaseous agent?

A. A streaming handheld extinguisher

B. A total-flooding system such as Halon 1301

C. A continuous-loop sensing element

16. A 14-volt circuit carries 6 amps. What power does the load consume?

A. 84 watts

B. 2.33 watts

C. 20 watts

17. Which describes the function of the squat (safety) switch?

A. It lowers the gear automatically at low airspeed

B. It illuminates the position lights only

C. It inhibits gear retraction when weight is on the wheels

18. Which fire detector responds to a rapid rate of temperature rise?

A. A thermocouple system

B. A single thermal spot switch

C. A photoelectric smoke detector

19. Which describes a correct practice for routing wiring relative to fluid lines?

- A. Route wiring below fluid lines to catch drips
- B. Route wiring above fluid lines so leaks cannot drip onto it
- C. Wrap fluid lines around wire bundles

20. Which gas is typically used to service an oleo strut, and why?

- A. Ordinary shop air, since moisture is harmless
- B. Oxygen, for its high pressure
- C. Dry nitrogen, to prevent internal moisture and corrosion

21. Which describes the correct minimum rivet edge distance in rivet diameters (D)?

- A. 1D
- B. 2D
- C. 4D

22. A blocked static port affects which instruments?

- A. Only the airspeed indicator
- B. The altimeter, airspeed indicator, and VSI
- C. Only the vertical speed indicator

23. Which fuel grade is dyed blue?

- A. 100LL aviation gasoline
- B. Jet A turbine fuel
- C. Grade 80 avgas

24. Which describes the purpose of bonding metallic aircraft parts together?

- A. To add structural strength to riveted joints
- B. To establish a common electrical potential and low-resistance path
- C. To seal joints against moisture

25. Which describes the correct disposition of a control cable with broken wires beyond limits?

- A. Lubricate and return to service
- B. Replace the cable, as it is unairworthy
- C. Reverse the cable end-for-end

26. For a 3/16-inch rivet (0.1875 in), the formed shop head height should be approximately 0.5D. What is that height?

- A. 0.094 inch
- B. 0.28 inch
- C. 0.375 inch

27. Which describes the airspeed indicator's pressure source(s)?

- A. Both pitot and static pressure
- B. Static pressure only
- C. Pitot pressure only

28. Which describes a correct fueling safety practice?

- A. Fuel as rapidly as possible to reduce static
- B. Leave the cap off to vent vapors

C. Bond and ground the aircraft and fueling equipment

29. Which gyroscopic instrument relies on rigidity in space to display pitch and roll?

A. The turn-and-slip indicator

B. The attitude indicator

C. The vertical speed indicator

30. Which describes the correct response to a transmission chip detector warning?

A. Investigate the metal contamination before further flight

B. Reset and return to service

C. Ignore it as a false indication

31. Which describes a fully articulated rotor system?

A. Two blades teetering as a unit

B. No flap or lead-lag hinges, blades flexing

C. Three or more blades, each free to flap, lead-lag, and feather

32. Which describes the correct method to verify oleo strut inflation?

A. By the exposed piston length against the manufacturer's figure

B. By a pressure gauge reading alone

C. By the firmness of the tire

33. Which describes the function of the cabin outflow valve?

- A. It supplies bleed air to the cabin
- B. It meters the air leaving the cabin to control pressure
- C. It cools the bleed air before entry

34. Which describes the consequence of mixing mineral-base and phosphate-ester hydraulic fluids?

- A. It raises the boiling point beneficially
- B. It destroys seals not compatible with that fluid
- C. It improves seal life with reduced pressure

35. For a 1/8-inch rivet (0.125 in), what is the minimum rivet pitch at 3D?

- A. 0.375 inch
- B. 0.125 inch
- C. 0.25 inch

36. Which describes the correct interval for an IFR altimeter and static system inspection?

- A. 12 calendar months
- B. 6 calendar months
- C. 24 calendar months

37. Which control changes the pitch of all main rotor blades equally and simultaneously?

- A. The collective pitch control
- B. The cyclic pitch control
- C. The antitorque pedals

38. Which describes the correct disposition of an applicable, overdue Airworthiness Directive?

- A. The aircraft is unairworthy until the AD is complied with and recorded
- B. The aircraft is airworthy until the next annual
- C. Recurring ADs may be ignored after first compliance

39. Which fluid color identifies phosphate-ester (Skydrol) hydraulic fluid?

- A. Red
- B. Blue
- C. Purple

40. Which describes the white arc on an airspeed indicator?

- A. The never-exceed range
- B. The flap operating range
- C. The caution range for smooth air only

41. Which describes how a blocked pitot tube affects the instruments while the static system is clear?

- A. Only the airspeed indicator is affected
- B. The altimeter and VSI freeze
- C. All three pitot-static instruments fail

42. Which describes the primary purpose of the UV-blocking coat in a fabric finish?

- A. To provide the final decorative color
- B. To block ultraviolet light from degrading the fabric

C. To shrink and tauten the fabric

43. Which describes the correct fuel quantity gauge calibration point for empty?

A. When the tank is completely dry

B. When only unusable fuel remains

C. When fuel reaches the filler neck

44. Which describes the consequence of a blocked fuel tank vent?

A. A vacuum forms that chokes off fuel flow

B. The tank over-pressurizes and floods the engine

C. Water enters through the filler cap

45. Which NDI method works only on ferromagnetic materials such as steel?

A. Dye penetrant inspection

B. Eddy current inspection

C. Magnetic particle inspection

46. Which describes the correct documentation for a major alteration?

A. FAA Form 337 with approved data

B. A logbook note using acceptable data

C. No documentation required

47. Which describes the function of a freewheeling unit (overrunning clutch)?

- A. It reduces engine RPM to rotor RPM
- B. It disengages a failed engine so the rotor can autorotate
- C. It tilts the rotor disc for direction

48. Which battery hazard during charging requires a well-ventilated area away from sparks?

- A. The release of inert helium
- B. The settling of electrolyte
- C. The release of explosive hydrogen gas

49. A circuit carries 4 amps through a 6-ohm load. What is the voltage across it?

- A. 24 volts
- B. 1.5 volts
- C. 10 volts

50. Which describes the correct response to a popped hydraulic filter clogging indicator?

- A. Reset and continue, as the filter is new
- B. Ignore it, as it is decorative
- C. Replace the clogged element that is now bypassing

51. Which describes the effect of differential aileron movement?

- A. It increases adverse yaw to aid the turn
- B. It locks the ailerons during cruise
- C. It reduces adverse yaw by deflecting the up-aileron farther

52. Which rivet alloy is the common general-purpose AD rivet that drives as received?

A. 2117

B. 2024

C. 1100

53. Which describes the correct disposition of an over-driven rivet whose shop head is below minimum height?

A. Accept it, as a flatter head clamps tighter

B. Remove and replace it, as it no longer clamps properly

C. Seal over the head to restore the clamp

54. Which describes how to clean an acrylic windshield safely?

A. Flush with plenty of clean water and a mild soap

B. Wipe the dry surface briskly with a rag

C. Use acetone to cut stubborn grime

55. A 28-volt system supplies a load consuming 560 watts. What current does it draw?

A. 20 amps

B. 588 amps

C. 0.05 amp

56. Which describes a once-per-revolution vertical vibration in a main rotor?

A. A spanwise balance problem

B. A blade out of track

C. A tail rotor drive imbalance

57. Which describes the correct interpretation of a missing red thermal disc on a fire bottle?

A. The bottle was discharged normally by the crew

B. The bottle discharged overboard due to overheat

C. The bottle is freshly serviced

58. Which describes the function of a sequence valve in a landing gear system?

A. It relieves over-pressure in the return line

B. It switches the gear to an emergency air source

C. It ensures operations occur in the correct order

59. Which describes the correct temperature consideration for setting cable tension?

A. Tension is independent of temperature

B. Cold cable is set tighter than the chart value

C. Tension must be set using the temperature-correction chart

60. Which describes the function of a negative pressure relief valve?

A. It limits maximum cabin differential pressure

B. It prevents outside pressure from exceeding cabin pressure

C. It supplies bleed air during climb

61. Which describes the correct minimum information on a return-to-service entry?

- A. The signature, certificate number, and kind of certificate of the approving person
- B. The aircraft owner's home address
- C. A photograph of the completed work

62. Which describes the function of the tail rotor on a single-main-rotor helicopter?

- A. It controls total lift via the collective
- B. It counteracts main-rotor torque and provides yaw control
- C. It tilts the rotor disc for direction

63. Which describes a correct practice for joining dissimilar metals?

- A. No protection is needed, as they never corrode
- B. Galvanic action strengthens the joint
- C. Apply protective barriers to prevent galvanic corrosion

64. Which describes a "running" hydraulic leak?

- A. A leak visible only when depressurized
- B. An internal leak with no external evidence
- C. A leak appearing only as an actuator strokes

65. Which describes the consequence of curing a composite repair with too little heat and pressure?

- A. An under-cured, weak laminate full of voids
- B. An overly strong, resin-rich laminate
- C. A laminate stronger than the original

66. Which describes the correct interpretation of a sidewall bulge on a tire?

- A. Normal flexing requiring no action
- B. Over-inflation corrected by bleeding air
- C. Possible ply separation requiring replacement

67. Which describes the function of a relief valve in a hydraulic system?

- A. It switches to an alternate source
- B. It directs fluid to the critical system first
- C. It opens above a set limit to prevent over-pressure

68. For a 1/8-inch rivet (0.125 in), the protruding shank before driving should be about 1.5D. What length is that?

- A. 0.1875 inch
- B. 0.0625 inch
- C. 0.375 inch

69. Which describes the correct response to repeatedly tripping circuit breaker?

- A. Replace the breaker with a higher rating
- B. Find and correct the fault rather than continuing to reset
- C. Continue resetting, as breakers tolerate unlimited resets

70. Which describes the correct first step before adding air to a low oleo strut?

- A. Add air immediately to raise the strut
- B. Replace the seals regardless of condition

C. Determine whether it is low on fluid, air, or both

71. Which describes the high-frequency vibration source in a helicopter?

A. The tail rotor or other high-speed components

B. The main rotor blade track

C. The landing skid attachment

72. Which describes the correct disposition for a wooden spar with a compression failure across the grain?

A. Reject the member, as it has been overstressed

B. Seal the surface and return to service

C. Accept it, as it is within grain-slope limits

73. Which describes the function of the cabin pressure controller?

A. It cools the bleed air entering the cabin

B. It supplies the cabin with bleed air

C. It positions the outflow valve to follow the cabin-altitude schedule

74. Which describes the correct minimum height-to-width of a properly formed shop head?

A. About 0.5D tall by 1.5D wide

B. About 1D tall by 1D wide

C. About 1.5D tall by 0.5D wide

75. Which describes the advantage of an alternator over a DC generator?

- A. It produces useful output at lower engine RPM
- B. It needs no rectification
- C. It eliminates the voltage regulator

76. Which describes the consequence of a resin-starved composite laminate?

- A. It is stronger due to higher fiber content
- B. It is heavier and more brittle
- C. It is weaker, with unsupported fibers and voids

77. A composite scarf repair on a 0.5-inch-thick laminate uses a 10:1 taper. What taper length does this require on each side?

- A. 5 inches
- B. 0.5 inch
- C. 2 inches

78. Which describes the correct disposition of an applicable Service Bulletin on its own for most Part 91 operators?

- A. Recommended but not mandatory unless adopted by an AD
- B. Always mandatory before further flight
- C. Required only for aircraft over 12,500 pounds

79. Which describes the consequence of carbon-fiber dust in an avionics bay?

- A. It improves cooling airflow
- B. It is harmless to electronics
- C. It is conductive and can short electrical equipment

80. Which describes the correct interpretation of a blocked pitot tube with a clear static system?

- A. All three pitot-static instruments fail
- B. Only the airspeed indicator is affected
- C. The altimeter and VSI freeze

81. Which control surface is most at risk of flutter if a repair adds weight aft of its hinge line?

- A. A fixed horizontal stabilizer
- B. A wing-root fairing
- C. A movable surface such as an aileron or elevator

82. Which describes the function of the main transmission in a helicopter?

- A. It disengages the engine for autorotation
- B. It transfers control inputs to the blades
- C. It reduces engine RPM to rotor RPM and multiplies torque

83. Which describes the correct response to water found in a fuel sump sample?

- A. Ignore it if the engine starts
- B. Drain each sump until the sample is clear
- C. Add de-icer and skip draining

84. Which describes the correct NDI method for a subsurface crack in aluminum?

- A. Magnetic particle inspection
- B. Eddy current or ultrasonic inspection

C. A simple visual inspection

85. Which describes the correct first action when a wire bundle is found chafing against structure?

A. Re-route and support it to stop the chafing and prevent arcing

B. Leave it, as chafing only affects appearance

C. Wrap the structure around the bundle

86. Which describes the anti-servo tab's movement relative to a stabilator?

A. Opposite to the surface, reducing control force

B. In the same direction, increasing control force

C. Independently, controlled only by the pilot

87. Which describes the correct interpretation of a low suction gauge with sluggish vacuum gyros?

A. A discharged main battery

B. A blocked static port

C. A failing vacuum pump or clogged filter

88. Which flap type increases both wing area and camber for the greatest lift?

A. The split flap

B. The plain flap

C. The Fowler flap

89. Which describes the correct interval for an installed ELT inspection?

- A. 12 calendar months
- B. 24 calendar months
- C. 6 calendar months

90. A 12-volt system supplies a 3-amp load. What power does it consume?

- A. 36 watts
- B. 4 watts
- C. 0.25 watt

91. Which describes the correct disposition of a pitted, heat-discolored wheel bearing?

- A. Repack with extra grease and reinstall
- B. Reinstall, as discoloration is cosmetic
- C. Replace the bearing rather than reuse it

92. Which describes the function of a priority valve in a hydraulic system?

- A. It opens above a set pressure to relieve the system
- B. It directs fluid to the more critical system first
- C. It allows flow in one direction only

93. Which describes the correct cleaning fluid concern for acrylic windows?

- A. Acrylic tolerates all common shop solvents
- B. Petroleum solvents and acetone attack and craze acrylic
- C. Solvents improve the optical clarity of acrylic

94. Which describes the consequence of a poorly bonded or corroded ground point?

- A. Lower resistance and a more stable circuit
- B. No effect on radio or instrument performance
- C. Higher resistance, radio noise, and erratic instruments

95. Which describes the correct disposition for an aircraft found not airworthy during inspection?

- A. Sign the airworthiness statement anyway to allow a ferry flight
- B. Record nothing and return the aircraft to the owner
- C. Record the inspection and provide a signed list of discrepancies

96. Which describes the correct routing principle for control cables passing through a bulkhead?

- A. Cables may be deflected sharply to fit available space
- B. A fairlead guides the cable with no more than a small specified deflection
- C. Pulleys must be removed where cables pass through structure

97. Which describes the correct interpretation of three green gear position lights?

- A. The gear is in transit
- B. The gear is unsafe
- C. All gear is down and locked

98. A riveted joint has a rivet pitch of 0.5 inch. What is the typical transverse pitch (gauge) at 75 percent?

- A. 0.375 inch
- B. 0.667 inch

C. 0.25 inch

99. Which describes the correct disposition of a fixed fire bottle with an expired discharge cartridge but good pressure?

- A. Return to service, as pressure proves it will fire
- B. Replace the cartridge, as an expired one may fail to discharge
- C. Ignore the cartridge date, as pressure is what matters

100. Which describes the correct fueling step that prevents static ignition?

- A. Filling the tank rapidly to reduce charge buildup
- B. Bonding and grounding the aircraft and fueling equipment
- C. Removing the cap to vent the static charge

Answer Key

1. C — Control surface travel limits are specified by the manufacturer in degrees of deflection (sometimes also in inches at a reference point). Measuring in cable inches or control force does not define the surface's throw, which is read with a protractor against the degree limits.

2. C — Tire pressure must be checked when the tires are cool, because operation heats the tire and raises the pressure, giving a false high reading. Checking after a hard landing or only at max gross weight does not give an accurate cool reading.

3. B — The 7xxx series uses zinc as its major alloying element and includes the high-strength 7075. The 2xxx series uses copper and the 3xxx series uses manganese, so zinc identifies the 7000 group.

4. A — By Ohm's law, $R = E/I = 24 \div 8 = 3$ ohms. The other choices result from multiplying instead of dividing or inverting the relationship; resistance equals voltage divided by current.

5. C — The 7×19 cable, with 7 strands of 19 wires each, is the most flexible construction and is used over pulleys for primary controls. The stiffer 7×7 cable is reserved for runs with minimal flexing.

6. B — The IFR transponder check is required every 24 calendar months, the same interval as the altimeter/static system inspection. The 12-month interval applies to the annual and ELT, not the transponder.

7. C — A composite repair must reproduce the original ply count, fiber type, and orientation, because the repair carries the original load path. Color and texture or resin brand alone do not ensure the laminate performs as designed.

8. A — Mineral-base hydraulic fluid (MIL-PRF-5606) is dyed red and uses Buna-N seals. Purple identifies phosphate-ester Skydrol and blue was the historic vegetable-base fluid.

9. C — Minimum edge distance at $2D$ for a 0.125-inch rivet is $2 \times 0.125 = 0.25$ inch. The full-diameter and half-inch figures do not match the $2D$ rule for a 1/8-inch rivet.

10. B — An accumulator stores hydraulic fluid under a gas charge, dampening pressure surges and providing an emergency reserve. A relief valve protects against over-pressure and a pressure regulator controls system pressure.

11. A — The annual inspection must be performed by a mechanic holding an Inspection Authorization (or an appropriately rated repair station or manufacturer). A plain A&P may do a 100-hour but not an annual.

12. B — The turn coordinator uses precession—the gyro's response to an applied force felt 90° away—to sense rate of turn. Rigidity in space is used by the attitude and heading indicators instead.

13. B — A check valve allows flow in one direction only and prevents reverse flow. A sequence valve controls the order of operations and a relief valve protects against over-pressure.

14. C — A 100-hour inspection may be performed by an appropriately rated A&P mechanic; an Inspection Authorization is not required, unlike the annual. It is not restricted to the manufacturer.

15. B — A total-flooding system such as Halon 1301 floods an enclosed engine zone with gaseous agent. A streaming handheld extinguisher and a sensing element serve different purposes.

16. A — Power equals voltage times current, so $P = 14 \times 6 = 84$ watts. The other choices come from dividing rather than multiplying; the power formula $P = E \times I$ gives 84 watts.

17. C — The squat (safety) switch senses weight on the wheels and inhibits gear retraction on the ground. It does not lower the gear automatically or merely drive the lights.

18. A — A thermocouple fire detection system responds to a rapid rate of temperature rise, distinguishing a fire from a slow heat increase. A spot switch triggers at a fixed temperature and a smoke detector senses smoke.

19. B — Wiring should be routed above fluid lines so a leak cannot drip onto it, preventing insulation damage and arcing. Routing below to "catch drips" or wrapping fluid lines around bundles is improper.

20. C — Oleo struts are serviced with dry nitrogen to prevent internal moisture and corrosion. Shop air introduces moisture, and oxygen is never used due to its fire/explosion hazard.

21. B — The minimum rivet edge distance is 2 times the rivet diameter (2D), with a preferred range of 2D to 4D. One diameter risks tear-out and 4D is the upper preferred limit, not the minimum.

22. B — A blocked static port affects the altimeter, airspeed indicator, and VSI, because all three depend on static pressure. A pitot blockage, by contrast, affects only the airspeed indicator.

23. A — Aviation gasoline grade 100LL is dyed blue. Jet A is straw/clear and grade 80 avgas was historically red, so blue identifies 100LL.

24. B — Bonding establishes a common electrical potential and a low-resistance path, also controlling static and aiding lightning protection. It is an electrical function, not a means of adding strength or sealing moisture.

25. B — A control cable with broken wires beyond limits is unairworthy and must be replaced. Lubrication or reversing the cable does not restore airworthiness, and cable failure means loss of control.

26. A — Shop head height at $0.5D$ for a 0.1875-inch rivet is $0.5 \times 0.1875 = 0.094$ inch. The other values do not match the half-diameter height rule for a 3/16-inch rivet.

27. A — The airspeed indicator operates from both pitot and static pressure, displaying the difference as airspeed. This is why a pitot blockage affects airspeed while a static blockage affects all three pitot-static instruments.

28. C — Bonding and grounding the aircraft and fueling equipment prevents a static spark from igniting fuel vapors. Rapid fueling increases static buildup, and an open cap does not safely dissipate the charge.

29. B — The attitude indicator relies on rigidity in space to display pitch and roll. The turn-and-slip indicator uses precession, and the VSI is a pitot-static, not gyroscopic, instrument.

30. A — A transmission chip detector warning requires investigating the metal contamination before further flight, because it signals internal wear or impending failure. Resetting or ignoring it risks catastrophic drive-system failure.

31. C — A fully articulated rotor uses three or more blades, each free to flap, lead-lag, and feather through individual hinges. Two teetering blades describe a semirigid rotor, and flexing-only describes a rigid rotor.

32. A — Oleo strut inflation is verified by the exposed piston length against the manufacturer's figure, not by gauge or tire firmness. The exposed piston length is the primary inflation check.

33. B — The outflow valve meters the air leaving the cabin to control cabin pressure, under command of the pressure controller. Supplying or cooling bleed air are functions of other components.

34. B — Mixing mineral-base and phosphate-ester fluids destroys the seals not compatible with that fluid, because each attacks the other's seal material. This can cause total system failure, so the fluids are never mixed.

35. A — Minimum rivet pitch at 3D for a 0.125-inch rivet is $3 \times 0.125 = 0.375$ inch. The smaller values do not satisfy the 3D minimum spacing for a 1/8-inch rivet.
36. C — The IFR altimeter and static system inspection is required within the preceding 24 calendar months, matching the transponder interval. It is not a 12- or 6-month requirement.
37. A — The collective pitch control changes the pitch of all main rotor blades equally and simultaneously, controlling total thrust. The cyclic changes pitch individually around the disc, and the pedals control yaw.
38. A — An applicable, overdue AD makes the aircraft unairworthy until it is complied with and recorded. It does not remain airworthy until the next annual, and recurring ADs are mandatory.
39. C — Phosphate-ester (Skydrol) hydraulic fluid is dyed purple. Red identifies mineral-base 5606 and blue was the historic vegetable-base fluid.
40. B — The white arc on an airspeed indicator defines the flap operating range. The never-exceed range is the red line and the smooth-air caution range is the yellow arc.
41. A — A blocked pitot tube with a clear static system affects only the airspeed indicator, because only the ASI uses pitot pressure. The altimeter and VSI rely on static pressure and remain normal.
42. B — The UV-blocking (aluminum-pigmented) coat blocks ultraviolet light, the primary cause of fabric deterioration. It is structural protection, not the final color or the tautening agent.
43. B — A fuel quantity gauge is calibrated to read empty when only unusable fuel remains, not when the tank is physically dry. Usable fuel is what is available to the engine.
44. A — A blocked vent forms a vacuum that chokes off fuel flow, starving the engine even with fuel aboard. It does not over-pressurize the tank or admit water through the cap.

45. C — Magnetic particle inspection works only on ferromagnetic materials such as steel. Dye penetrant finds surface-open flaws on any non-porous material and eddy current works on conductive materials including aluminum.
46. A — A major alteration requires FAA Form 337 with approved data. A logbook note with acceptable data suffices only for minor work, and alterations always require documentation.
47. B — The freewheeling unit disengages a failed engine so the rotor can keep turning and autorotate. RPM reduction is the transmission's job and disc tilting is the swashplate's.
48. C — Charging batteries releases explosive hydrogen gas, requiring a well-ventilated area away from sparks. Helium is not produced, and electrolyte settling is not the charging hazard in question.
49. A — By Ohm's law, $E = I \times R = 4 \times 6 = 24$ volts. The other choices come from dividing rather than multiplying; voltage equals current times resistance.
50. C — A popped clogging indicator means the filter element is clogged and bypassing unfiltered fluid, so it must be replaced. Resetting and continuing leaves the system on unfiltered fluid.
51. C — Differential aileron movement reduces adverse yaw by deflecting the up-going aileron farther than the down-going one. It is designed to counter, not increase, adverse yaw, and does not lock the ailerons.
52. A — The 2117 (AD) rivet is the common general-purpose rivet that drives as received without heat treatment. The 2024 (DD) rivet must be refrigerated, and the 1100 (A) rivet is soft and non-structural.
53. B — An over-driven rivet whose shop head is below minimum height no longer clamps properly and must be removed and replaced. A flatter head is not "tighter," and sealant does not restore the clamp.
54. A — Acrylic windshields should be cleaned with plenty of clean water and a mild soap to float grit away. Dry wiping grinds grit into the surface, and acetone attacks and crazes acrylic.

55. A — Current equals power divided by voltage, so $I = 560 \div 28 = 20$ amps. The other choices come from multiplying instead of dividing or inverting the relationship.

56. B — A once-per-revolution vertical vibration is most likely caused by a blade out of track, since an out-of-track blade flies a different path. A balance problem produces lateral vibration instead.

57. B — A missing red thermal disc indicates the bottle discharged overboard due to overheat or over-pressure. A missing yellow disc would indicate a normal crew discharge.

58. C — A sequence valve ensures operations occur in the correct order, such as gear doors before the gear. Over-pressure relief is the relief valve's job and switching to an emergency source is the shuttle valve's.

59. C — Control cable tension must be set using the manufacturer's temperature-correction chart, because cable and airframe expand differently with temperature. Tension is not independent of temperature, and cold cable is not arbitrarily set tighter.

60. 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 maximum differential is the positive relief valve's role.

61. A — A return-to-service entry must include the signature, certificate number, and kind of certificate of the approving person. The owner's address and a photograph are not required entry contents.

62. B — The tail rotor counteracts main-rotor torque and provides yaw control on a single-main-rotor helicopter. The collective controls lift and the cyclic controls direction.

63. C — Protective barriers are applied when joining dissimilar metals to prevent galvanic corrosion in the presence of an electrolyte. Galvanic action accelerates corrosion rather than strengthening the joint.

64. C — A running leak appears only as an actuator strokes, often past a wiper seal, and may be within limits. A leak visible only when depressurized or an internal leak with no external evidence describe different conditions.

65. A — Curing a composite repair with too little heat and pressure leaves an under-cured, weak laminate full of voids. Inadequate cure does not produce a resin-rich or stronger-than-original laminate.

66. C — A sidewall bulge most likely indicates ply separation within the carcass, requiring replacement. It is not normal flexing or a simple over-inflation issue.

67. C — A relief valve opens above a set limit to prevent over-pressure. Switching to an alternate source is the shuttle valve's job and prioritizing a critical system is the priority valve's.

68. A — The protruding shank before driving should be about 1.5D, so for a 0.125-inch rivet that is $1.5 \times 0.125 = 0.1875$ inch. The other values do not match the 1.5D rule.

69. B — The correct response to a repeatedly tripping breaker is to find and correct the fault rather than continuing to reset, because the breaker trips to protect the wiring. Up-rating or endless resets risks a fire.

70. C — Before adding air, the mechanic must determine whether the strut is low on fluid, air, or both, then follow the procedure. Adding air to a strut low on fluid leaves it unable to absorb loads, and seal replacement is not the first step.

71. A — High-frequency vibration points to the tail rotor or other high-speed components. Main-rotor track problems cause low frequency, and the skids are not a rotating source.

72. A — A compression failure across the grain requires rejecting the wooden member, because it has been overstressed and weakened. Sealing or accepting it as within grain-slope limits is incorrect.

73. C — The cabin pressure controller positions the outflow valve to follow the selected cabin-altitude schedule. Cooling or supplying bleed air are functions of other components.

74. A — A properly formed shop head is approximately 0.5D tall by 1.5D wide. The reversed or 1D×1D dimensions do not match the correct shop-head proportions.

75. A — An alternator produces useful output at lower engine RPM than a DC generator, charging at idle and taxi. It does require rectification and still needs a voltage regulator.

76. C — A resin-starved laminate is weaker, with unsupported fibers and voids, because there is too little resin to support the fibers. Resin starvation reduces, not increases, strength, and does not make it heavier.

77. A — A 10:1 taper on a 0.5-inch-thick laminate requires $10 \times 0.5 = 5$ inches of taper length on each side. The shorter values do not satisfy the 10:1 ratio.

78. A — On its own, a Service Bulletin is recommended but not mandatory for most Part 91 operators, unless adopted by an AD or required by an operating rule. The issuing authority determines the legal weight.

79. C — Carbon-fiber dust is electrically conductive and can short electrical equipment if it settles in an avionics bay. It does not aid cooling and is not harmless to electronics.

80. B — A blocked pitot tube with a clear static system affects only the airspeed indicator, because only the ASI uses pitot pressure. The altimeter and VSI rely on static pressure and remain normal.

81. C — A movable control surface such as an aileron or elevator is most at risk of flutter if weight is added aft of its hinge line. A fixed stabilizer and a fairing are not balanced control surfaces in the same sense.

82. C — The main transmission reduces engine RPM to rotor RPM and multiplies torque. Disengaging the engine is the freewheeling unit's job and transferring control inputs is the swashplate's.

83. B — When water appears in a fuel sump, the mechanic drains each sump until the sample is clear, because water collects there and can stop the engine. Ignoring it or skipping the drain is unsafe.

84. B — Eddy current or ultrasonic inspection is appropriate for a subsurface crack in aluminum, both detecting subsurface flaws in non-magnetic material. Magnetic particle won't work on aluminum and visual won't find subsurface cracks.

85. A — A chafing wire bundle must be re-routed and supported to stop the chafing and prevent arcing, because chafe-through can start a fire. It is not merely an appearance issue, and wrapping structure around the bundle is improper.
86. B — An anti-servo tab moves in the same direction as the stabilator, increasing control force and feel. Moving opposite would reduce force, defeating its purpose.
87. C — A low suction gauge with sluggish vacuum gyros points to a failing vacuum pump or clogged filter. A discharged battery or blocked static port would not specifically slow the vacuum-driven gyros.
88. C — The Fowler flap increases both wing area and camber as it moves aft on tracks, producing the greatest lift increase. The split flap deflects only the lower surface and the plain flap only hinges down.
89. A — An installed ELT requires inspection every 12 calendar months. The 24-month interval applies to the altimeter/static and transponder checks, not the ELT.
90. A — Power equals voltage times current, so $P = 12 \times 3 = 36$ watts. The other choices come from dividing rather than multiplying; $P = E \times I$ gives 36 watts.
91. C — A pitted, heat-discolored bearing must be replaced, not reused, because such damage means it is no longer serviceable. Adding grease does not restore a damaged bearing.
92. B — A priority valve directs fluid to the more critical system first when pressure is limited. Relieving over-pressure is the relief valve's job and one-way flow is the check valve's.
93. B — Petroleum solvents and acetone attack and craze acrylic, so they must never be used to clean acrylic windows. Acrylic does not tolerate all shop solvents, and solvents do not improve clarity.
94. C — A poorly bonded or corroded ground raises resistance and causes radio noise and erratic instruments by degrading the common electrical potential. It does not lower resistance or leave performance unaffected.

95. C — An aircraft found not airworthy is documented by recording the inspection and providing the owner a signed list of discrepancies. The mechanic must never sign an airworthiness statement for an unairworthy aircraft or record nothing.

96. B — A fairlead guides a cable through a bulkhead with no more than a small specified deflection (commonly no more than 3°). Sharp deflection is not permitted, and pulleys are not removed where cables pass through structure.

97. C — Three green gear position lights indicate all gear is down and locked. In-transit or unsafe conditions are shown by a red/amber light or by the absence of the greens.

98. A — Transverse pitch (gauge) at 75 percent of a 0.5-inch rivet pitch is $0.75 \times 0.5 = 0.375$ inch. The other values do not match the 75-percent relationship.

99. B — An expired discharge cartridge may fail to discharge the agent even with good bottle pressure, so it must be replaced. Pressure alone does not prove the bottle will fire.

100. B — Bonding and grounding the aircraft and fueling equipment prevents a static spark from igniting fuel vapors. Rapid filling increases static buildup, and removing the cap does not safely dissipate the charge.