PRACTICE EXAM 10 SIMULATION (60 QUESTIONS)

1. A mechanic fabricating a rigid aluminum fuel line cuts the tube and notices a rough internal edge. Before flaring, the mechanic should:

A. Increase the tube diameter to compensate

B. Deburr the inside and outside of the cut

C. Apply sealant to the rough edge

D. Heat the tube end to soften the burr

2. While servicing a lead-acid battery, a mechanic reads a specific gravity of 1.28 with a hydrometer. This indicates the cell is:

A. Discharged and needs replacement

B. In a charged condition

C. Contaminated with fuel

D. Frozen and unusable

3. A mechanic preparing to fuel a piston-engine trainer must confirm the fuel grade. The correct fuel is:

A. 100LL avgas, dyed blue

B. Jet A, straw-colored

C. Diesel fuel

D. Jet A-1 turbine fuel

4. A mechanic must compute the total resistance of 7-ohm and 5-ohm resistors in series before sizing a fuse. The total is:

A. 12 ohms

B. 2.92 ohms

C. 35 ohms

D. 2 ohms

5. While removing corrosion from an aluminum panel, a mechanic reaches for a cleaning tool. The correct choice is:

A. A steel wire brush for speed

B. Steel wool for a fine finish

C. A carbon-steel scraper

D. A non-metallic abrasive pad

6. A mechanic finishing a repair must make the maintenance record entry. The entry must include the work description, the date, and the:

A. Estimated resale value of the aircraft

B. Names of all observers present

C. Signature, certificate number, and certificate type

D. Serial numbers of all tools used

7. A mechanic preparing to weigh an aircraft places it on three scales. Before reading the weights, the aircraft must be:

A. Loaded with full passengers and cargo

B. Tilted nose-down for drainage

C. Cleaned, configured to standard, and leveled

D. Parked outdoors in a light breeze

8. While inspecting a flexible hose, a mechanic sees the printed lay line spiraling around it. This indicates the hose:

A. Is rated for higher pressure than required

B. Has been installed with a twist and must be corrected

C. Has reached the end of its service life

D. Is the correct length for the run

9. A mechanic computing a loaded CG finds it falls 1 inch aft of the rear limit. The correct action is to:

A. Fly the aircraft because aft CG aids stability

B. Correct the loading before flight

C. Fly if below maximum gross weight

D. Add fuel to shift the CG aft further

10. A mechanic servicing an oxygen system notices an oily smudge on a fitting. The correct action is to:

A. Apply more oil for a better seal

B. Wipe it with petroleum solvent

C. Clean it completely before servicing

D. Ignore it as harmless

11. A mechanic must select the safetying method for a castellated nut on a critical bolt. The correct method is:

A. A cotter pin through the drilled bolt and nut slots

B. A fiber locking insert

C. A drop of thread adhesive

D. Reliance on torque alone

12. A mechanic preparing to bond and ground an aircraft before fueling does so to:

A. Dissipate static and prevent vapor ignition

B. Speed up the fuel flow rate

C. Calibrate the fuel quantity gauges

D. Keep water out of the fuel

13. A mechanic must compute the current through a 4-ohm load on a 24-volt bus while troubleshooting. The current is:

A. 96 amps

B. 0.17 amps

C. 28 amps

D. 6 amps

14. A mechanic inspecting a steel engine mount finds reddish-brown flaking deposits. This corrosion product identifies the metal as:

A. Aluminum

B. Copper alloy

C. Magnesium

D. Steel (iron)

15. A mechanic selecting an NDI method to find an internal flaw in a thick steel fitting chooses:

A. Liquid penetrant inspection

B. Visual inspection with a mirror

C. Ultrasonic inspection

D. Tap testing only

16. A mechanic preparing to torque a fastener confirms the manual specifies 50 foot-pounds. The inch-pound wrench should be set to:

A. 4.17 inch-pounds

B. 50 inch-pounds

C. 600 inch-pounds

D. 500 inch-pounds

17. A mechanic servicing a strut selects the proper gas to charge it. The preferred gas is:

A. Pure oxygen

B. Moist shop air

C. Carbon dioxide

D. Dry nitrogen

18. A mechanic preparing a metal surface for paint ensures it is clean and treated because paint over a contaminated surface will:

A. Fail to adhere and allow corrosion underneath

B. Dry faster than normal

C. Add strength to the panel

D. Become too thick to inspect

19. A mechanic computing the area of a circular access hole of 2-inch radius ($\pi \approx 3.1416$) gets closest to:

A. 6.28 square inches

B. 4.00 square inches

C. 12.57 square inches

D. 25.13 square inches

20. A mechanic finds an applicable AD that has not been complied with. The aircraft is therefore:

A. Airworthy if the annual is current

B. Not airworthy until the AD is complied with

C. Airworthy with a written waiver

D. Exempt because it is privately operated

21. A mechanic installing safety wire on two bolts routes the wire so that loosening tendency:

A. Tightens each bolt

B. Loosens each bolt evenly

C. Pulls the bolt heads apart

D. Holds the bolts in neutral

22. A mechanic must determine the data required to perform a major alteration. The correct data is:

A. A general handbook of acceptable methods

B. FAA-approved data specific to the alteration

C. The aircraft sales brochure

D. A coworker's verbal description

23. A mechanic fabricating a tube must form an aircraft flare. The correct flare angle is:

A. 30 degrees

B. 45 degrees

C. 37 degrees

D. 60 degrees

24. A mechanic finds carbon-fiber composite in direct contact with an aluminum bracket. The concern is that the carbon fiber:

A. Adds excessive weight to the joint

B. Cannot be painted while touching aluminum

C. Is conductive and will cause galvanic corrosion of the aluminum

D. Conducts too much heat to the aluminum

25. A mechanic must compute the moment of a 110-lb item at an arm of 40 inches. The moment is:

A. 2.75 inch-pounds

B. 150 inch-pounds

C. 70 inch-pounds

D. 4,400 inch-pounds

26. A mechanic servicing a hydraulic system that uses Skydrol must avoid adding MIL-H-5606 because the fluids are:

A. Identical and wasteful to combine

B. Both unsuitable for aircraft

C. Required to be blended evenly

D. Chemically incompatible and will damage seals

27. A mechanic finds an aluminum surface lifted into flaky layers. This is identified as:

A. Uniform surface corrosion

B. Filiform corrosion

C. Exfoliation corrosion

D. A harmless paint blister

28. A mechanic must select the fire extinguisher for an energized avionics fire. The correct agent is:

A. A pressurized water stream

B. CO_2 or another non-conductive agent

C. Ordinary liquid-fire foam

D. Sand poured slowly

29. A mechanic computing the side of a square doubler with a 49-square-inch area finds the side is:

A. 24.5 inches

B. 12 inches

C. 14 inches

D. 7 inches

30. A mechanic installing a flexible hose leaves a slight bend rather than a straight run because the hose:

A. Contracts in length when pressurized

B. Conducts heat better when curved

C. Is easier to safety wire when bent

D. Reads its lay line more clearly when bent

31. A mechanic preparing to taxi an aircraft for a maintenance run must not enter a runway without:

A. Lowering the flaps fully

B. Setting the parking brake

C. Receiving an ATC clearance

D. Switching off all electrical loads

32. A mechanic identifies a self-tapping screw used to attach a primary structural fitting. This installation is:

A. Acceptable because the screw cuts its own thread

B. Acceptable if torqued correctly

C. Incorrect, because self-tapping screws are non-structural

D. Acceptable for any load

33. A mechanic computing 70% of a 60-question exam confirms the minimum passing count is:

A. 30 questions

B. 42 questions

C. 36 questions

D. 48 questions

34. A mechanic must determine the document with the aircraft's approved datum and weight limits. The correct source is:

A. The sales catalog

B. The owner's flight log

C. A shop price sheet

D. The Type Certificate Data Sheet (TCDS)

35. A mechanic finds a self-locking fiber-insert nut installed beside a hot exhaust. The concern is that heat will:

A. Degrade the fiber insert and reduce locking

B. Make the nut too heavy

C. Increase the nut's conductivity

D. Cause the bolt to crack

36. A mechanic must compute the volume of a rectangular tank 10 × 4 × 3 inches. The volume is:

A. 17 cubic inches

B. 40 cubic inches

C. 30 cubic inches

D. 120 cubic inches

37. A mechanic inspecting a battery box finds white powder with pitting on nearby aluminum. The most likely cause is:

A. Over-torqued fasteners

B. Spilled electrolyte and trapped moisture

C. Excessive paint thickness

D. Aluminum rivets nearby

38. A mechanic must determine which inspection an A&P (without an IA) may sign off. The correct one is:

A. The annual inspection

B. The 100-hour inspection

C. A major alteration

D. A progressive annual

39. A mechanic computing the total resistance of three 9-ohm resistors in parallel finds:

A. 3 ohms

B. 27 ohms

C. 9 ohms

D. 0.33 ohms

40. A mechanic preparing to remove corrosion checks the depth of metal removed against limits because:

A. Deeper removal improves resistance

B. The coating needs a minimum depth

C. Depth has no effect on strength

D. Removal beyond limits weakens the structure

41. A mechanic must classify a fire involving pooled aviation fuel. This is a:

A. Class A fire

B. Class B fire

C. Class C fire

D. Class D fire

42. A mechanic converting 30°C to Fahrenheit for a specification gets:

A. 86°F

B. 54°F

C. 62°F

D. 122°F

43. A mechanic inspecting a tube bend finds it flattened well beyond the limit. The tube should be:

A. Returned to service if it passes fluid

B. Rejected, because the flattened bend restricts flow and creates a stress point

C. Re-rounded with a hammer

D. Painted over the flattened area

44. A mechanic must identify the lightest structural metal, which is flammable in finely divided form:

A. Titanium

B. Stainless steel

C. Copper

D. Magnesium

45. A mechanic recognizes a co-worker rushing to finish before shift's end and skipping verification. This reflects the Dirty Dozen factor of:

A. Complacency

B. Lack of knowledge

C. Pressure

D. Lack of resources

46. A mechanic computing the power of a device at 28 volts and 4 amps gets:

A. 112 watts

B. 7 watts

C. 32 watts

D. 24 watts

47. A mechanic must determine why aircraft loads are wired in parallel across the bus. The reason is:

A. To force identical current through each load

B. To increase total resistance

C. To eliminate circuit protection

D. So one load failing open does not interrupt the others

48. A mechanic identifies a green or blue-green corrosion deposit. This indicates corrosion of:

A. Aluminum

B. Copper alloy

C. Magnesium

D. Titanium

49. A mechanic preparing to clean a transparent acrylic window must use:

A. A petroleum solvent

B. A steel wool pad

C. Only approved cleaners to avoid crazing

D. A strong alkaline cleaner

50. A mechanic must determine the meaning of an AD compliance time of "before further flight." This means the aircraft:

A. May fly 100 hours first

B. May wait until the next annual

C. Is exempt if private

D. Must not be flown until the action is done

51. A mechanic computing the total resistance of a 5-ohm resistor in series with a parallel pair of 12-ohm and 12-ohm resistors finds:

A. 16 ohms

B. 11 ohms

C. 8 ohms

D. 5 ohms

52. A mechanic recognizes that a hardened metal is also more brittle because hardening:

A. Increases hardness and strength but also brittleness

B. Softens the metal and relieves stress

C. Refines the grain without changing hardness

D. Has no effect on toughness

53. A mechanic accounting for every tool before and after a job does so to prevent:

A. Increased maintenance cost

B. A tool being left in the aircraft (FOD)

C. A missing-tool report on the shift log

D. The tools being misplaced for the week

54. A mechanic converting 7/8 inch to a decimal for a drawing gets:

A. 0.625 inch

B. 0.750 inch

C. 0.875 inch

D. 0.500 inch

55. A mechanic recognizes a wing stalls beyond the critical angle of attack because:

A. Airflow separates from the upper surface and lift drops abruptly

B. The engine loses power

C. The wing produces maximum lift at the stall

D. The airspeed increases past the limit

56. A mechanic inspecting a hose finds the outer cover hardened and cracked. The hose should be:

A. Returned to service after wiping it clean

B. Rejected as a defect

C. Painted to seal the cracks

D. Operated at reduced pressure

57. A mechanic must determine the correct first step when corrosion is found on a panel. The first step is to:

A. Clean the area to assess the full extent

B. Apply primer over the corrosion

C. Paint the panel to seal it

D. Return the aircraft to service and monitor

58. A mechanic recognizes that a Service Bulletin not referenced by an AD is generally:

A. Advisory in nature

B. Mandatory federal law

C. A replacement for the type certificate

D. Prohibited from being accomplished

59. A mechanic must determine the grip length requirement for a bolt. The unthreaded shank should:

A. Carry the shear load on its threads

B. Extend two inches past the nut

C. Sit flush in a countersink

D. Span the parts being joined

60. A mechanic computing the resistance of a 24-volt circuit drawing 8 amps gets:

A. 192 ohms

B. 0.33 ohms

C. 32 ohms

D. 3 ohms

Answer Key

1. B — Deburr the inside and outside of the cut. After cutting tubing, the inside and outside of the cut must be deburred so the internal burr does not restrict flow or contaminate the system and the external burr does not prevent a proper flare. Deburring is a required fabrication step before flaring.

2. B — In a charged condition. A charged lead-acid cell reads a specific gravity around 1.27–1.30, so a 1.28 reading indicates a charged state. The hydrometer gives a direct check of state of charge.

3. A — 100LL avgas, dyed blue. Piston (reciprocating) engines run on aviation gasoline, commonly 100LL dyed blue. Jet fuel and diesel are not appropriate for a piston engine.

4. A — 12 ohms. In series, resistances add directly: 7 + 5 = 12 ohms. There is one current path, so the values sum.

5. D — A non-metallic abrasive pad. Aluminum must be cleaned only with non-metallic or aluminum-compatible abrasives, never with steel tools that embed particles and start galvanic corrosion. The nylon abrasive pad is the safe choice.

6. C — Signature, certificate number, and certificate type. A return-to-service entry must include the work description, the date, and the approving person's signature, certificate number, and certificate type. The other options are never required.

7. C — Cleaned, configured to standard, and leveled. Before weighing, the aircraft must be cleaned, set to standard configuration, and leveled so the arm measurements are valid. It is weighed empty in still air, not loaded or tilted.

8. B — Has been installed with a twist and must be corrected. A spiraling lay line indicates the hose was installed with a twist, an unacceptable condition that stresses the hose. It must be reinstalled correctly.

9. B — Correct the loading before flight. A CG aft of the rear limit is out of range, so the loading must be corrected before flight. Being below maximum weight does not excuse an out-of-limit CG.

10. C — Clean it completely before servicing. Oil in contact with high-pressure oxygen can ignite violently, so any oily smudge on an oxygen fitting must be completely cleaned before servicing. Adding oil or using petroleum solvent would be dangerous.

11. A — A cotter pin through the drilled bolt and nut slots. A non-self-locking castellated nut on a critical bolt is safetied by a cotter pin through the drilled bolt and the nut's slots. Adhesive or torque alone do not provide positive safetying.

12. A — Dissipate static and prevent vapor ignition. Bonding and grounding dissipate the static charge generated by fuel flow, preventing a spark from igniting fuel vapors. This is the central fire-prevention purpose.

13. D — 6 amps. From Ohm's Law, $I = E \div R = 24 \div 4 = 6$ amps. Dividing voltage by resistance gives the current.

14. D — Steel (iron). Reddish-brown flaking deposits are the characteristic corrosion product of iron and steel — rust. Identifying the metal from its corrosion product guides correct treatment.

15. C — Ultrasonic inspection. Ultrasonic inspection uses high-frequency sound waves that reflect from internal flaws, making it suitable for a thick steel fitting. Penetrant and visual methods find only surface conditions.

16. C — 600 inch-pounds. Since one foot-pound equals 12 inch-pounds, 50 × 12 = 600 inch-pounds. Converting before setting the wrench prevents a torque error.

17. D — Dry nitrogen. Nitrogen is preferred for charging struts because it is inert, dry, and will not support combustion. Pure oxygen is never used, and moist air invites corrosion.

18. A — Fail to adhere and allow corrosion underneath. Paint over a contaminated surface will not adhere and lets corrosion start beneath the finish, so the surface must be clean and treated. Surface preparation determines a finish's protective value.

19. C — 12.57 square inches. The area of a circle is $\pi r^2 = 3.1416 \times 2^2 = 3.1416 \times 4 \approx 12.57$ square inches. Using radius in πr^2 is essential.

20. B — Not airworthy until the AD is complied with. An applicable uncomplied AD makes the aircraft unairworthy regardless of inspection status. Compliance must be accomplished and documented.

21. A — Tightens each bolt. Safety wire must be routed so any loosening tendency increases wire tension and pulls each bolt tight. Installed backward, it would permit loosening.

22. B — FAA-approved data specific to the alteration. A major alteration must be accomplished with FAA-approved data, not a general handbook, brochure, or verbal description. Approved data is required for major work.

23. C — 37 degrees. Aircraft flared fittings use a 37-degree flare, distinct from the 45-degree automotive flare. The two are not interchangeable.

24. C — Is conductive and will cause galvanic corrosion of the aluminum. Carbon/graphite fiber is electrically conductive, so direct contact with aluminum forms a galvanic couple that corrodes the aluminum. The two must be isolated with a barrier.

25. D — 4,400 inch-pounds. Moment equals weight times arm: 110 × 40 = 4,400 inch-pounds. The moment quantifies the turning tendency about the datum.

26. D — Chemically incompatible and will damage seals. MIL-H-5606 (mineral) and Skydrol (phosphate-ester) are chemically incompatible, and mixing them swells or dissolves the system's seals. Each system must be serviced only with its specified fluid.

27. C — Exfoliation corrosion. Exfoliation lifts the metal surface into flaky layers and is an advanced form of intergranular corrosion. Its layered, flaking appearance distinguishes it from a paint blister.

28. B — CO_2 or another non-conductive agent. An energized avionics fire is Class C and requires a non-conductive agent such as CO_2. Water and conductive foams must never be used on energized equipment.

29. D — 7 inches. The side of a square equals the square root of its area: $\sqrt{49} = 7$ inches. Taking a root works backward from area to a dimension.

30. A — Contracts in length when pressurized. Flexible hose shortens when pressurized, so a slight installed bend prevents damaging tension on the fittings. A straight, tight run would stress the end fittings.

31. C — Receiving an ATC clearance. A mechanic taxiing for a maintenance run must never enter a runway or movement area without an ATC clearance, a core practice in preventing runway incursions.

32. C — Incorrect, because self-tapping screws are non-structural. Self-tapping screws cut their own thread and are intended for non-structural attachment, not primary structural fittings. A structural fitting requires structural screws or bolts.

33. B — 42 questions. A 70% passing score on 60 questions requires 0.70 × 60 = 42 correct answers. This is a direct percentage calculation.

34. D — The Type Certificate Data Sheet (TCDS). The TCDS provides the FAA-approved datum location and weight limits for a specific aircraft type. It is the authoritative reference for an aircraft's certificated limits.

35. A — Degrade the fiber insert and reduce locking. A fiber-insert self-locking nut has a temperature limitation, and high heat degrades the insert and reduces locking. A metal self-locking nut is used in high-heat areas.

36. D — 120 cubic inches. The volume of a rectangular solid is length × width × height = 10 × 4 × 3 = 120 cubic inches. Volume is in cubic units.

37. B — Spilled electrolyte and trapped moisture. Battery boxes are corrosion hot spots because spilled electrolyte and trapped moisture aggressively attack nearby aluminum, producing white powder with pitting. This combination, not fasteners or paint, drives the corrosion.

38. B — The 100-hour inspection. A standard A&P may perform and approve a 100-hour inspection without an Inspection Authorization. The annual and major alterations require an IA.

39. A — 3 ohms. For equal parallel resistors, total resistance equals one value divided by the number: 9 ÷ 3 = 3 ohms. Total parallel resistance is less than the smallest branch.

40. D — Removal beyond limits weakens the structure. Removing too much metal during corrosion removal thins the part below its structural limits and weakens it. The depth removed must be checked against the manual's limits.

41. B — Class B fire. Pooled aviation fuel is a Class B flammable-liquid fire, extinguished with CO_2, dry chemical, or foam. Water must never be used because it spreads the burning fuel.

42. A — 86°F. Converting 30°C gives (30 × 1.8) + 32 = 54 + 32 = 86°F. The conversion is a routine application of the formula.

43. B — Rejected, because the flattened bend restricts flow and creates a stress point. A bend flattened beyond the limit restricts flow and creates a stress concentration that can crack, so the tube must be rejected. A proper bend stays round.

44. D — Magnesium. Magnesium is the lightest structural metal but is flammable in finely divided form such as chips or dust. Its low weight is valuable where it can be handled safely.

45. C — Pressure. Rushing to finish before shift's end and skipping verification reflects the Dirty Dozen factor of pressure. Recognizing and managing deadline pressure defends against the errors it causes.

46. A — 112 watts. Power equals voltage times current: $P = E \times I = 28 \times 4 = 112$ watts. This base formula gives the load directly.

47. D — So one load failing open does not interrupt the others. Aircraft loads are wired in parallel so an open failure in one branch leaves the others operating on the common bus voltage. Parallel branches provide independent paths.

48. B — Copper alloy. A green or blue-green deposit (verdigris) is the characteristic corrosion product of copper alloys. Identifying the metal from its corrosion color guides treatment.

49. C — Only approved cleaners to avoid crazing. Transparent acrylic must be cleaned only with approved cleaners, because solvents, steel wool, and strong cleaners craze or scratch the surface. Crazing ruins the transparency.

50. D — Must not be flown until the action is done. An AD with a "before further flight" compliance time requires the action before the next flight, the most urgent category. It cannot be deferred or treated as optional.

51. B — 11 ohms. The two 12-ohm resistors in parallel give 6 ohms, and that in series with the 5-ohm resistor totals $5 + 6 = 11$ ohms. Reduce the parallel group first.

52. A — Increases hardness and strength but also brittleness. Hardening by heating and quenching increases hardness and strength but also brittleness. Tempering is then used to reduce that brittleness.

53. B — A tool being left in the aircraft (FOD). Accounting for every tool before and after a job prevents a tool being left in the aircraft, where it causes foreign object damage. Tool control is a key error-prevention safeguard.

54. C — 0.875 inch. Dividing 7 by 8 gives 0.875. Memorizing common fraction-to-decimal equivalents speeds drawing and hardware work.

55. A — Airflow separates from the upper surface and lift drops abruptly. Beyond the critical angle of attack, airflow separates from the wing's upper surface and lift drops abruptly — a stall. Lift increases with angle of attack only up to that point.

56. B — Rejected as a defect. A hardened, cracked outer cover is a rejectable hose defect indicating deterioration. Wiping, painting, or reducing pressure does not restore a degraded hose.

57. A — Clean the area to assess the full extent. The first step in addressing corrosion is to clean the area so its full extent can be seen and assessed. Painting or priming over corrosion seals it in and worsens the damage.

58. A — Advisory in nature. A Service Bulletin not referenced by an AD is generally advisory unless an operating rule requires compliance. It becomes mandatory only when an AD mandates its action.

59. D — Span the parts being joined. Correct grip length places the smooth unthreaded shank through the joined parts so the bolt bears on its shank, keeping shear load off the threads. The shank should span the joined material.

60. D — 3 ohms. From Ohm's Law, R = E ÷ I = 24 ÷ 8 = 3 ohms. Dividing voltage by current gives the resistance.