PRACTICE EXAM 11 SIMULATION (60 QUESTIONS)

1. The horizontal distance from the datum to the center of gravity of an item is called the:

A. Arm

B. Moment

C. Tare

D. Datum offset

2. The product of an item's weight and its arm is called the:

A. Useful load

B. Empty weight

C. Moment

D. Gross weight

3. The ability of a metal to be drawn out into wire without breaking is called:

A. Hardness

B. Ductility

C. Brittleness

D. Conductivity

4. An imaginary vertical reference plane from which all horizontal arms are measured is the:

A. Center of gravity

B. Datum

C. Moment arm

D. Mean chord

5. The opposition a material offers to the flow of electric current is called:

A. Resistance

B. Voltage

C. Current

D. Power

6. A semiconductor device that allows current to flow in one direction only is a:

A. Capacitor

B. Inductor

C. Diode

D. Transformer

7. The advanced form of intergranular corrosion that lifts a metal surface into flaky layers is called:

A. Filiform corrosion

B. Exfoliation corrosion

C. Surface corrosion

D. Fretting corrosion

8. The weight of chocks or blocks on a scale that must be subtracted to find the true aircraft weight is called:

A. Useful load

B. Gross weight

C. Empty weight

D. Tare weight

9. The length of the unthreaded portion of a bolt's shank is known as the:

A. Thread pitch

B. Pitch diameter

C. Minor diameter

D. Grip length

10. A conductive liquid such as moisture or salt water that enables corrosion is called the:

A. Electrolyte

B. Anode

C. Cathode

D. Dielectric

11. The point at which the entire weight of an aircraft is considered to be concentrated is the:

A. Center of gravity

B. Datum

C. Mean aerodynamic chord

D. Moment center

12. A nut that contains a fiber or nylon insert to grip the threads and resist loosening is a:

A. Castellated nut

B. Plain hex nut

C. Self-locking nut

D. Wing nut

13. The twisting force applied to a fastener, measured in inch-pounds or foot-pounds, is called:

A. Tension

B. Shear

C. Torque

D. Compression

14. A reproduction of a master engineering drawing, containing full part detail, is commonly called a:

A. Pictorial sketch

B. Freehand drawing

C. Block diagram

D. Blueprint

15. The straight printed marking along a flexible hose that identifies it and reveals twist is the:

A. Reinforcement braid

B. Inner tube

C. Outer cover

D. Lay line

16. A break in a current path that stops all flow in a series circuit is called an:

A. Open

B. Short

C. Ground

D. Overload

17. The amount of matter in an object, which stays constant regardless of location, is its:

A. Mass

B. Weight

C. Density

D. Volume

18. A legally enforceable FAA regulation issued to correct an unsafe condition in a product is an:

A. Advisory Circular

B. Service Bulletin

C. Airworthiness Directive

D. Owner's notice

19. A reinforcing fiber known by the trade name Kevlar, valued for high impact strength, is:

A. Fiberglass

B. Carbon fiber

C. Boron filament

D. Aramid fiber

20. The heat-treatment process that softens a metal and relieves internal stresses by slow heating and cooling is:

A. Hardening

B. Tempering

C. Annealing

D. Quenching

21. The rate at which electrons flow past a point in a circuit, measured in amperes, is called:

A. Voltage

B. Current

C. Resistance

D. Power

22. An additional authorization that permits a mechanic to perform annual inspections and approve major repairs is the:

A. Airframe rating

B. Powerplant rating

C. Inspection Authorization

D. Repairman certificate

23. A network of fine surface cracks that forms on transparent acrylic when cleaned improperly is called:

A. Pitting

B. Spalling

C. Crazing

D. Etching

24. The corrosion that occurs at the tightly fitted mating surfaces of two parts subject to slight vibration is called:

A. Exfoliation corrosion

B. Fretting corrosion

C. Filiform corrosion

D. Uniform corrosion

25. The principle stating that pressure applied to a confined fluid transmits equally in all directions is:

A. Pascal's Law

B. Boyle's Law

C. Charles's Law

D. Bernoulli's principle

26. The total permissible variation from a stated dimension on a drawing is called the:

A. Datum

B. Scale

C. Tolerance

D. Projection

27. The combination of a reinforcing fiber with a resin matrix to form a stronger, lighter material produces a:

A. Forging

B. Casting

C. Composite

D. Laminate of pure metal

28. A device that stores electrical energy in an electrostatic field and opposes voltage change is a:

A. Capacitor

B. Inductor

C. Diode

D. Resistor

29. The fuel grade used in piston aircraft engines, dyed blue, is:

A. Jet A

B. Jet A-1

C. 80/87 avgas

D. 100LL avgas

30. A component that controls field current to hold a steady bus voltage as engine speed varies is a:

A. Rectifier

B. Voltage regulator

C. Capacitor

D. Circuit breaker

31. The corrosion product appearing as a green or blue-green deposit indicates corrosion of:

A. Copper alloy

B. Aluminum

C. Steel

D. Magnesium

32. A drawing's lower-right block that identifies the part number, scale, material, and tolerances is the:

A. Bill of materials

B. Revision block

C. Legend

D. Title block

33. The difference between maximum allowable gross weight and empty weight is called the:

A. Tare weight

B. Moment

C. Empty moment

D. Useful load

34. The inspection method using high-frequency sound waves to detect internal flaws is called:

A. Ultrasonic inspection

B. Liquid penetrant inspection

C. Visual inspection

D. Tap testing

35. A fitting that seals by a ferrule biting into the tube as the nut is tightened, without a flare, is a:

A. 37° flared fitting

B. 45° flared fitting

C. Soldered fitting

D. Flareless fitting

36. The split metal pin inserted through a drilled bolt and a castellated nut to safety it is a:

A. Lock washer

B. Cotter pin

C. Set screw

D. Tab washer

37. The downward force of gravity acting on an aircraft's mass is called:

A. Weight

B. Lift

C. Thrust

D. Drag

38. A type of corrosion that attacks along the grain boundaries of a metal, often hidden, is called:

A. Surface corrosion

B. Filiform corrosion

C. Intergranular corrosion

D. Galvanic corrosion

39. The 12-calendar-month inspection that must be signed by an IA holder is the:

A. Annual inspection

B. 100-hour inspection

C. Preflight inspection

D. Progressive check

40. A device that converts mechanical energy from the engine into electrical energy is a:

A. Generator

B. Motor

C. Capacitor

D. Resistor

41. The accelerated corrosion that occurs when two dissimilar metals contact with an electrolyte present is called:

A. Surface corrosion

B. Galvanic corrosion

C. Filiform corrosion

D. Fretting corrosion

42. The standardized document supplied for every hazardous material, listing its hazards and safe handling, is the:

A. Type Certificate Data Sheet

B. Safety Data Sheet

C. Airworthiness Directive

D. Advisory Circular

43. Technical data specifically approved by the FAA, required for major repairs and alterations, is called:

A. Acceptable data

B. Advisory data

C. Reference data

D. Approved data

44. The angle between a wing's chord line and the oncoming air is called the:

A. Dihedral angle

B. Incidence angle

C. Angle of attack

D. Sweep angle

45. Aviation gasoline used in reciprocating engines is graded by its:

A. Color only

B. Specific gravity only

C. Boiling point

D. Octane/performance number

46. The flammable, lightest structural metal that burns in finely divided form is:

A. Titanium

B. Magnesium

C. Stainless steel

D. Copper

47. A coil of wire that stores energy in a magnetic field and opposes a change in current is an:

A. Inductor

B. Capacitor

C. Diode

D. Resistor

48. The sustained tensile-stress corrosion in a corrosive environment that produces cracking is called:

A. Surface corrosion

B. Filiform corrosion

C. Fretting corrosion

D. Stress corrosion cracking

49. The signed maintenance entry by which a mechanic certifies an aircraft is airworthy with respect to the work is called:

A. A discrepancy list

B. A work order

C. A squawk sheet

D. Approval for return to service

50. The unitless ratio comparing a substance's density to that of water is called:

A. Specific gravity

B. Viscosity

C. Mass

D. Pressure

51. The thin, alternating long-and-short-dashed line marking the center of a hole on a drawing is a:

A. Hidden line

B. Center line

C. Phantom line

D. Break line

52. The chemical film applied to aluminum (such as alodine) that inhibits corrosion and aids paint adhesion is a:

A. Topcoat

B. Conversion coating

C. Lacquer

D. Sealant

53. A protective electrochemical process that thickens the natural oxide layer on aluminum is called:

A. Plating

B. Painting

C. Anodizing

D. Galvanizing

54. The reference model of average sea-level conditions (59°F, 29.92 in Hg) is the:

A. Density altitude chart

B. Standard atmosphere

C. Pressure altitude table

D. Lapse-rate index

55. The unwritten "this is how we do it here" habits that bypass procedure, a Dirty Dozen factor, are called:

A. Complacency

B. Norms

C. Distraction

D. Stress

56. The sacrificial protective layer often plated onto steel hardware is:

A. Zinc-chromate primer

B. Anodized aluminum

C. Cadmium plating

D. Powder coating

57. The upward force generated primarily by the wings, opposing weight, is called:

A. Thrust

B. Drag

C. Weight

D. Lift

58. The maintenance document that contains the procedures necessary to keep a product airworthy is the:

A. Advertising brochure

B. Owner's flight log

C. Sales catalog

D. Instructions for Continued Airworthiness

59. A bolt-and-nut arrangement secured against rotation by wire twisted to tighten as it loosens uses:

A. A cotter pin

B. A lock washer

C. Safety wire

D. Thread adhesive

60. The point beyond which airflow separates from the wing and lift drops abruptly is the:

A. Stagnation point

B. Critical angle of attack

C. Center of pressure

D. Mean aerodynamic chord

Answer Key

1. A — Arm. The arm is the horizontal distance, in inches, from the datum to the center of gravity of an item. It is multiplied by weight to find the moment.

2. C — Moment. The moment is the product of an item's weight and its arm (Moment = Weight × Arm). Moments are summed to locate the aircraft's center of gravity.

3. B — Ductility. Ductility is a metal's ability to be drawn or stretched into wire without breaking. It is distinct from malleability (rolled or hammered into shape) and hardness (resistance to penetration).

4. B — Datum. The datum is an imaginary vertical reference plane, fixed for a given aircraft, from which all horizontal arms are measured. It does not move with fuel burn and is not located at the CG.

5. A — Resistance. Resistance is the opposition a material offers to current flow, measured in ohms. It converts electrical energy into heat as electrons collide with the material's atoms.

6. C — Diode. A diode is a semiconductor that allows current to flow in one direction only and blocks it in reverse. This one-way behavior is the basis of rectifying AC to DC.

7. B — Exfoliation corrosion. Exfoliation is an advanced form of intergranular corrosion that lifts the metal surface into flaky layers. Its layered, flaking appearance signals deep structural attack.

8. D — Tare weight. Tare weight is the weight of chocks or blocks on the scale that must be subtracted to find the true aircraft weight. Failing to subtract it inflates the empty weight.

9. D — Grip length. Grip length is the length of the unthreaded portion of a bolt's shank, which should span the joined parts so the bolt bears on its shank, not its threads. This keeps shear load off the threads.

10. A — Electrolyte. The electrolyte is a conductive liquid such as moisture or salt water that enables the corrosion reaction. Removing it is one way to halt corrosion.

11. A — Center of gravity. The center of gravity is the point at which the entire weight of the aircraft is considered concentrated — the balance point. It is expressed as an arm from the datum.

12. C — Self-locking nut. A self-locking nut contains a fiber or nylon insert (or a deformed metal collar) that grips the threads to resist loosening. A castellated nut, by contrast, requires a cotter pin.

13. C — Torque. Torque is the twisting force applied to a fastener, measured in inch-pounds or foot-pounds. Applying the specified torque keeps the joint secure without overstressing the fastener.

14. D — Blueprint. A blueprint is a reproduction of a master engineering drawing containing the full part detail, including views, dimensions, materials, and the title block. The term is used generally for working-drawing copies.

15. D — Lay line. The lay line is the straight printed marking running along a flexible hose that identifies it and reveals an installed twist if it spirals. Both functions make it a key inspection feature.

16. A — Open. An open is a break in the current path that stops all flow in a series circuit and shows infinite resistance. A short, by contrast, causes excessive current.

17. A — Mass. Mass is the amount of matter in an object and stays constant regardless of location. Weight, by contrast, is the gravitational force on that mass and varies with the field.

18. C — Airworthiness Directive. An Airworthiness Directive is a legally enforceable FAA regulation issued to correct an unsafe condition in a product. Compliance is mandatory, and the aircraft is unairworthy until it is complied with.

19. D — Aramid fiber. Aramid fiber, sold under the trade name Kevlar, is valued for its high impact and tensile strength at light weight. It is one of the three common reinforcing fibers.

20. C — Annealing. Annealing softens a metal and relieves internal stresses through slow heating and very slow cooling. Hardening and quenching do the opposite by increasing hardness and brittleness.

21. B — Current. Current is the rate at which electrons flow past a point in a circuit, measured in amperes. Voltage is the pressure that drives the flow, and resistance opposes it.

22. C — Inspection Authorization. An Inspection Authorization is an additional authorization permitting an experienced A&P to perform annual inspections and approve major repairs and alterations for return to service. It expands the mechanic's authority.

23. C — Crazing. Crazing is a network of fine surface cracks that forms on transparent acrylic when cleaned with improper agents. This is why only approved cleaners are used on acrylic.

24. B — Fretting corrosion. Fretting corrosion occurs at the tightly fitted mating (faying) surfaces of two parts subject to slight vibration or movement. Its location at tightly fitted interfaces distinguishes it.

25. A — Pascal's Law. Pascal's Law states that pressure applied to a confined fluid transmits undiminished and equally in all directions. It is the basis of hydraulic force transmission and multiplication.

26. C — Tolerance. The tolerance is the total permissible variation from a stated dimension on a drawing. A part outside its tolerance is not airworthy regardless of how close it appears.

27. C — Composite. A composite combines a reinforcing fiber with a resin matrix to form a material stronger and lighter than either component alone. Common fibers include fiberglass, carbon, and aramid.

28. A — Capacitor. A capacitor stores electrical energy in an electrostatic field between its plates and opposes a change in voltage. An inductor, by contrast, stores energy in a magnetic field and opposes a change in current.

29. D — 100LL avgas. Aviation gasoline for piston engines is commonly grade 100LL ("100 low-lead"), dyed blue. Jet fuels are kerosene-type turbine fuels and are straw/clear.

30. B — Voltage regulator. A voltage regulator controls field current to hold a steady bus voltage as engine speed and load vary. This keeps the bus at a safe, constant voltage.

31. A — 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.

32. D — Title block. The title block, usually in the lower-right corner, identifies the part number, name, scale, material, and tolerances. Reading it first frames everything else on the drawing.

33. D — Useful load. Useful load is the difference between maximum allowable gross weight and empty weight, comprising crew, passengers, usable fuel, and cargo. It represents everything the aircraft can carry above its empty configuration.

34. A — Ultrasonic inspection. Ultrasonic inspection uses high-frequency sound waves that reflect from internal flaws and can also measure thickness. Penetrant and visual methods find only surface conditions.

35. D — Flareless fitting. A flareless fitting seals by a ferrule or sleeve that bites into the tube as the coupling nut is tightened, without a formed flare. These are common in high-pressure systems.

36. B — Cotter pin. A cotter pin is the split metal pin inserted through a drilled bolt and a castellated nut, then bent to safety the nut. It provides positive mechanical safetying.

37. A — Weight. Weight is the downward force of gravity acting on the aircraft's mass, one of the four forces of flight. It is opposed by lift in steady, level flight.

38. C — Intergranular corrosion. Intergranular corrosion attacks along the metal's grain boundaries and is often hidden beneath the surface, making it more dangerous than visible surface corrosion. Exfoliation is its advanced form.

39. A — Annual inspection. The annual inspection is the 12-calendar-month inspection required for most aircraft and must be signed by a mechanic holding an Inspection Authorization. The 100-hour may be signed by an A&P.

40. A — Generator. A generator converts mechanical energy from the engine into electrical energy. A motor does the reverse, converting electrical energy into mechanical rotation.

41. B — Galvanic corrosion. Galvanic corrosion occurs when two dissimilar metals contact each other with an electrolyte present, forming a cell that accelerates attack on the more active metal. Isolating the metals prevents it.

42. B — Safety Data Sheet. The Safety Data Sheet is the standardized document supplied for every hazardous material, listing its hazards, safe handling, first-aid, and disposal information. It must be available to anyone using the material.

43. D — Approved data. Approved data is technical data specifically approved by the FAA and required for major repairs and alterations. Acceptable data, by contrast, may be used for minor work.

44. C — Angle of attack. The angle of attack is the angle between the wing's chord line and the oncoming air. Increasing it increases lift up to the critical angle, beyond which the wing stalls.

45. D — Octane/performance number. Aviation gasoline is graded by its octane or performance number, which indicates its anti-knock quality. Color identifies the grade, but the grading itself is by performance number.

46. B — 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.

47. A — Inductor. An inductor is a coil of wire that stores energy in a magnetic field and opposes a change in current. A capacitor, by contrast, stores energy in an electrostatic field and opposes voltage change.

48. D — Stress corrosion cracking. Stress corrosion cracking develops when a part is under sustained tensile stress in a corrosive environment, producing cracks. It differs from surface, filiform, and fretting corrosion.

49. D — Approval for return to service. Approval for return to service is the signed maintenance entry by which a certificated person certifies the aircraft is airworthy with respect to the work performed. The signature is a legal certification.

50. A — Specific gravity. Specific gravity is the unitless ratio comparing a substance's density to that of water, which is 1.0. It is measured with a hydrometer to check battery electrolyte and fuel.

51. B — Center line. A center line is a thin line of alternating long and short dashes marking the center of a hole or a symmetrical feature. Recognizing line types is fundamental to reading a drawing.

52. B — Conversion coating. A conversion coating such as alodine is a chemical film applied to aluminum that inhibits corrosion and improves paint adhesion. It treats the metal surface rather than acting as a topcoat.

53. C — Anodizing. Anodizing is an electrochemical process that thickens the natural oxide layer on aluminum for corrosion resistance. It treats the metal itself rather than coating it with paint.

54. B — Standard atmosphere. The standard atmosphere is the reference model of average sea-level conditions — 59°F, 29.92 inches of mercury, 14.7 psi. It is the baseline for instrument calibration and performance.

55. B — Norms. Norms are the unwritten "this is how we do it here" habits that bypass approved procedure, one of the Dirty Dozen human factors. Recognizing them is the first step to following correct procedure.

56. C — Cadmium plating. Cadmium plating is a sacrificial protective layer often applied to steel hardware to guard against corrosion. The cadmium corrodes preferentially, protecting the steel beneath.

57. D — Lift. Lift is the upward force generated primarily by the wings, opposing weight, one of the four forces of flight. In steady, level flight, lift equals weight.

58. D — Instructions for Continued Airworthiness. The Instructions for Continued Airworthiness contain the maintenance and inspection procedures necessary to keep a product airworthy. Compliance with applicable ICA is required.

59. C — Safety wire. Safety wire is the wire threaded through fasteners and twisted so any loosening tendency tightens the wire. It must always be routed in the tightening direction.

60. B — Critical angle of attack. The critical angle of attack is the point beyond which airflow separates from the wing and lift drops abruptly — a stall. Lift increases with angle of attack only up to this point.