

PRACTICE EXAM 13 SIMULATION (60 QUESTIONS)

1. Statement 1: In a series circuit, the same current flows through every component. Statement 2: In a series circuit, the total resistance is less than the smallest resistor. Which is correct?

- A. Statement 2 only
- B. Both statements
- C. Statement 1 only
- D. Neither statement

2. Statement 1: Empty weight includes the crew and passengers. Statement 2: Empty weight includes the unusable fuel. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

3. Statement 1: An AD is an advisory recommendation that may be deferred. Statement 2: A Service Bulletin is always mandatory federal law by itself. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

4. Statement 1: The arm is the horizontal distance from the datum to an item. Statement 2: The moment is the product of weight and arm. Which is correct?

- A. Statement 1 only
- B. Neither statement
- C. Both statements
- D. Statement 2 only

5. Statement 1: A 45° flare is the aircraft standard. Statement 2: A 37° flare is the aircraft standard. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

6. Statement 1: Magnetic particle inspection works on aluminum. Statement 2: Liquid penetrant inspection finds only surface-breaking flaws. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

7. Statement 1: Mass changes with the gravitational field. Statement 2: Weight changes with the gravitational field. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements

D. Neither statement

8. Statement 1: A major alteration may be done with acceptable data. Statement 2: A major alteration requires FAA-approved data. Which is correct?

A. Statement 1 only

B. Statement 2 only

C. Both statements

D. Neither statement

9. Statement 1: Corrosion requires an electrolyte. Statement 2: Corrosion requires an anode and a cathode. Which is correct?

A. Statement 1 only

B. Neither statement

C. Both statements

D. Statement 2 only

10. Statement 1: Oil must be kept away from high-pressure oxygen. Statement 2: Oil should be applied generously to oxygen fittings for sealing. Which is correct?

A. Statement 1 only

B. Statement 2 only

C. Both statements

D. Neither statement

11. Statement 1: A capacitor stores energy in a magnetic field. Statement 2: An inductor stores energy in a magnetic field. Which is correct?

A. Statement 1 only

- B. Both statements
- C. Statement 2 only
- D. Neither statement

12. Statement 1: Aircraft loads are wired in series across the bus. Statement 2: Aircraft loads are wired in parallel across the bus. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

13. Statement 1: Tare weight is part of the useful load. Statement 2: Tare weight must be subtracted to find true aircraft weight. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Statement 2 only
- D. Neither statement

14. Statement 1: Annealing hardens a metal. Statement 2: Tempering increases brittleness. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

15. Statement 1: A 100-hour inspection may be signed by an A&P. Statement 2: An annual inspection requires an IA holder. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

16. Statement 1: A green deposit indicates aluminum corrosion. Statement 2: A green deposit indicates copper-alloy corrosion. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

17. Statement 1: Bernoulli's principle states that faster-moving air has higher pressure. Statement 2: Faster-moving air over a wing's upper surface has lower pressure. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

18. Statement 1: A diode allows current to flow in one direction only. Statement 2: A diode stores energy in an electrostatic field. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

19. Statement 1: Safety wire installed backward permits loosening. Statement 2: Safety wire must be routed so loosening tightens the wire. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Statement 2 only
- D. Neither statement

20. Statement 1: A self-tapping screw is suitable for primary structure. Statement 2: A self-locking fiber nut is unaffected by high heat. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

21. Statement 1: The center of gravity is total moment divided by total weight. Statement 2: The datum moves forward as fuel burns. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

22. Statement 1: A circuit breaker should be matched to the wire's safe capacity. Statement 2: A breaker should be upsized to stop nuisance tripping. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements

D. Neither statement

23. Statement 1: Exfoliation is a mild surface stain. Statement 2: Exfoliation lifts metal into flaky layers. Which is correct?

A. Statement 1 only

B. Statement 2 only

C. Both statements

D. Neither statement

24. Statement 1: A flat washer safeties a castellated nut. Statement 2: A cotter pin safeties a castellated nut. Which is correct?

A. Statement 1 only

B. Statement 2 only

C. Both statements

D. Neither statement

25. Statement 1: Pascal's Law applies to gases only. Statement 2: Pascal's Law states pressure transmits equally in all directions in a confined fluid. Which is correct?

A. Statement 1 only

B. Both statements

C. Statement 2 only

D. Neither statement

26. Statement 1: 70% of a 60-question exam is 42 correct. Statement 2: 70% of a 60-question exam is 36 correct. Which is correct?

A. Statement 1 only

- B. Statement 2 only
- C. Both statements
- D. Neither statement

27. Statement 1: Magnesium is a heavy, non-flammable metal. Statement 2: Magnesium is the lightest structural metal and flammable in finely divided form. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

28. Statement 1: Carbon fiber is non-conductive and inert with aluminum. Statement 2: Carbon fiber is conductive and causes galvanic corrosion of aluminum. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

29. Statement 1: Nitrogen is preferred for servicing struts. Statement 2: Pure oxygen is preferred for servicing struts. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

30. Statement 1: A title block identifies the part, scale, material, and tolerances. Statement 2: A title block lists the names of all observers. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

31. Statement 1: The gas laws may be applied using Celsius temperatures. Statement 2: The gas laws require absolute temperature. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

32. Statement 1: Useful load includes the aircraft structure. Statement 2: Useful load is maximum gross weight minus empty weight. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

33. Statement 1: Two dissimilar metals in contact with an electrolyte form a galvanic cell. Statement 2: Identical metals always corrode faster than dissimilar ones. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

34. Statement 1: A maintenance record entry must include the signer's certificate number. Statement 2: A maintenance entry must include the aircraft's resale value. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

35. Statement 1: A stall occurs when the wing reaches maximum lift. Statement 2: A stall occurs below the critical angle of attack. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

36. Statement 1: Total resistance in parallel equals the sum of branch resistances. Statement 2: Total resistance in parallel is less than the smallest branch. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Statement 2 only
- D. Neither statement

37. Statement 1: Paint adheres well over a contaminated surface. Statement 2: A finish is only as good as the surface preparation beneath it. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Statement 2 only

D. Neither statement

38. Statement 1: An "after annual" compliance time means the most urgent AD action. Statement 2: A "before further flight" AD must be complied with before the next flight. Which is correct?

A. Statement 1 only

B. Both statements

C. Neither statement

D. Statement 2 only

39. Statement 1: Specific gravity is expressed in pounds per cubic inch. Statement 2: Specific gravity is a unitless ratio compared to water. Which is correct?

A. Statement 1 only

B. Both statements

C. Statement 2 only

D. Neither statement

40. Statement 1: Grip length should place the shank, not threads, in shear. Statement 2: Grip length is measured in threads per inch. Which is correct?

A. Statement 1 only

B. Statement 2 only

C. Both statements

D. Neither statement

41. Statement 1: Intergranular corrosion attacks the surface only. Statement 2: Intergranular corrosion attacks along grain boundaries and is often hidden. Which is correct?

A. Statement 1 only

- B. Statement 2 only
- C. Both statements
- D. Neither statement

42. Statement 1: A fuse can be reset after operating. Statement 2: A circuit breaker can be reset after tripping. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

43. Statement 1: Lift opposes thrust in level flight. Statement 2: Lift opposes weight in level flight. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

44. Statement 1: A conversion coating inhibits corrosion and aids paint adhesion. Statement 2: A conversion coating adds structural strength. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

45. Statement 1: Acceptable data may be used for minor work. Statement 2: Approved data is required for major work. Which is correct?

- A. Both statements
- B. Statement 1 only
- C. Statement 2 only
- D. Neither statement

46. Statement 1: A hardened metal is more ductile than before hardening. Statement 2: A hardened metal is more brittle than before hardening. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

47. Statement 1: An open in a series circuit stops all current. Statement 2: A short causes excessive current to flow. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

48. Statement 1: 100LL avgas is for turbine engines. Statement 2: Jet A is for turbine engines. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

49. Statement 1: Bonding and grounding before fueling dissipate static. Statement 2: Bonding and grounding increase fuel flow rate. Which is correct?

- A. Statement 1 only
- B. Statement 2 only
- C. Both statements
- D. Neither statement

50. Statement 1: A CG forward of the forward limit makes the aircraft tail-heavy. Statement 2: A CG aft of the aft limit reduces stability. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Statement 2 only
- D. Neither statement

51. Statement 1: Ductility is the ability to resist penetration. Statement 2: Ductility is the ability to be drawn into wire. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Statement 2 only
- D. Neither statement

52. Statement 1: The 100-hour overflight may be up to 10 hours to reach an inspection site. Statement 2: The 100-hour overflight may be exceeded by 50 hours for any reason. Which is correct?

- A. Statement 2 only
- B. Statement 1 only
- C. Both statements

D. Neither statement

53. Statement 1: Deburring a tube increases its wall thickness. Statement 2: Deburring removes the burr so the flare seats and flow is unrestricted. Which is correct?

A. Statement 1 only

B. Statement 2 only

C. Both statements

D. Neither statement

54. Statement 1: An anodized layer is a thickened oxide that resists corrosion. Statement 2: Anodizing adds a coat of paint over the metal. Which is correct?

A. Statement 1 only

B. Statement 2 only

C. Both statements

D. Neither statement

55. Statement 1: An Inspection Authorization permits approving major repairs. Statement 2: An Inspection Authorization permits issuing Airworthiness Directives. Which is correct?

A. Statement 1 only

B. Statement 2 only

C. Both statements

D. Neither statement

56. Statement 1: Filiform corrosion appears as flaky layers. Statement 2: Filiform corrosion appears as wormlike tracks under a finish. Which is correct?

A. Statement 1 only

- B. Both statements
- C. Neither statement
- D. Statement 2 only

57. Statement 1: A generator converts electrical energy to mechanical rotation. Statement 2: A generator converts mechanical energy to electrical energy. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Statement 2 only
- D. Neither statement

58. Statement 1: Standard sea-level pressure is 7.5 psi. Statement 2: Standard sea-level pressure is 14.7 psi. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

59. Statement 1: A Safety Data Sheet lists an aircraft's weight limits. Statement 2: A Safety Data Sheet lists a hazardous material's hazards and handling. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Neither statement
- D. Statement 2 only

60. Statement 1: An aircraft over max gross weight is airworthy if the CG is correct. Statement 2: An aircraft must satisfy both weight and CG limits independently. Which is correct?

- A. Statement 1 only
- B. Both statements
- C. Statement 2 only
- D. Neither statement

Answer Key

1. C — Statement 1 only. S1 is true: in a series circuit the same current flows through every component. S2 is false: series total resistance is the sum of the resistances, greater than the largest, not less than the smallest.
2. D — Statement 2 only. S1 is false: empty weight excludes crew and passengers, which are useful load. S2 is true: empty weight includes unusable fuel, which always remains in the aircraft.
3. D — Neither statement. S1 is false: an AD is a mandatory regulation, not a deferrable advisory. S2 is false: a Service Bulletin is generally advisory unless an AD or rule makes it mandatory.
4. C — Both statements. S1 is true: the arm is the horizontal distance from the datum to an item. S2 is true: the moment equals weight times arm. Both are foundational weight-and-balance definitions.
5. B — Statement 2 only. S1 is false: 45° is the automotive flare. S2 is true: 37° is the aircraft standard flare, and the two are not interchangeable.
6. D — Statement 2 only. S1 is false: magnetic particle inspection works only on ferromagnetic materials, not aluminum. S2 is true: liquid penetrant detects only surface-breaking flaws.
7. B — Statement 2 only. S1 is false: mass is constant regardless of gravity. S2 is true: weight, the gravitational force on the mass, changes with the field.
8. B — Statement 2 only. S1 is false: a major alteration may not be done with mere acceptable data. S2 is true: a major alteration requires FAA-approved data.

9. C — Both statements. S1 is true: corrosion requires an electrolyte. S2 is true: it also requires an anode and a cathode (plus a conductive path). All four conditions must be present.

10. A — Statement 1 only. S1 is true: oil must be kept away from high-pressure oxygen, with which it can ignite violently. S2 is false: oil must never be applied to oxygen fittings.

11. C — Statement 2 only. S1 is false: a capacitor stores energy in an electrostatic field. S2 is true: an inductor stores energy in a magnetic field.

12. B — Statement 2 only. S1 is false: loads are not wired in series across the bus. S2 is true: aircraft loads are wired in parallel so one open failure does not interrupt the others.

13. C — Statement 2 only. S1 is false: tare weight is not part of the aircraft or its useful load. S2 is true: tare must be subtracted to find the true aircraft weight.

14. D — Neither statement. S1 is false: annealing softens a metal, it does not harden it. S2 is false: tempering reduces brittleness, it does not increase it.

15. C — Both statements. S1 is true: a 100-hour inspection may be signed by an A&P. S2 is true: an annual inspection requires an IA holder. The two inspections differ in approval authority.

16. B — Statement 2 only. S1 is false: aluminum corrosion is a white-to-gray powder. S2 is true: a green or blue-green deposit indicates copper-alloy corrosion.

17. D — Statement 2 only. S1 is false: Bernoulli's principle holds that faster air has lower pressure. S2 is true: faster air over the wing's upper surface has lower pressure, contributing to lift.

18. A — Statement 1 only. S1 is true: a diode allows current to flow in one direction only. S2 is false: storing energy in an electrostatic field describes a capacitor, not a diode.

19. B — Both statements. S1 is true: safety wire installed backward permits loosening. S2 is true: it must be routed so loosening tightens the wire. Both describe correct safety-wire practice.

20. D — Neither statement. S1 is false: self-tapping screws are non-structural. S2 is false: a fiber-insert nut is affected by high heat, which degrades the insert.

21. A — Statement 1 only. S1 is true: CG equals total moment divided by total weight. S2 is false: the datum is fixed and does not move as fuel burns.

22. A — Statement 1 only. S1 is true: a breaker must be matched to the wire's safe current capacity. S2 is false: a breaker must never be upsized to stop nuisance tripping, which removes protection.

23. B — Statement 2 only. S1 is false: exfoliation is not a mild surface stain. S2 is true: exfoliation lifts the metal into flaky layers, an advanced intergranular form.

24. B — Statement 2 only. S1 is false: a flat washer does not safety a castellated nut. S2 is true: a cotter pin through the drilled bolt and nut slots provides the safetying.

25. C — Statement 2 only. S1 is false: Pascal's Law applies to confined liquids, not gases only. S2 is true: pressure on a confined fluid transmits equally in all directions.

26. A — Statement 1 only. S1 is true: 70% of 60 is $0.70 \times 60 = 42$ correct. S2 is false: 36 would be 60%, not 70%.

27. B — Statement 2 only. S1 is false: magnesium is neither heavy nor non-flammable. S2 is true: magnesium is the lightest structural metal and flammable in finely divided form.

28. B — Statement 2 only. S1 is false: carbon fiber is not inert with aluminum. S2 is true: carbon fiber is conductive and causes galvanic corrosion of aluminum, requiring isolation.

29. A — Statement 1 only. S1 is true: dry nitrogen is preferred for servicing struts. S2 is false: pure oxygen is never used to service struts.

30. A — Statement 1 only. S1 is true: the title block identifies the part, scale, material, and tolerances. S2 is false: it does not list observers.

31. B — Statement 2 only. S1 is false: the gas laws may not use Celsius. S2 is true: the gas laws require absolute temperature (Rankine or Kelvin).

32. B — Statement 2 only. S1 is false: useful load excludes the aircraft structure, which is part of empty weight. S2 is true: useful load is maximum gross weight minus empty weight.

33. A — Statement 1 only. S1 is true: two dissimilar metals with an electrolyte form a galvanic cell. S2 is false: identical metals do not inherently corrode faster than dissimilar ones — the galvanic risk is with dissimilar metals.

34. A — Statement 1 only. S1 is true: a maintenance entry must include the signer's certificate number. S2 is false: resale value is never a required element.

35. D — Neither statement. S1 is false: a stall is not the point of maximum lift; lift drops at the stall. S2 is false: a stall occurs beyond, not below, the critical angle of attack.

36. C — Statement 2 only. S1 is false: parallel total resistance is not the sum of the branches. S2 is true: parallel total resistance is less than the smallest branch.

37. C — Statement 2 only. S1 is false: paint does not adhere well over contamination. S2 is true: a finish is only as good as the surface preparation beneath it.

38. D — Statement 2 only. S1 is false: there is no "after annual" most-urgent category. S2 is true: a "before further flight" AD must be complied with before the next flight.

39. C — Statement 2 only. S1 is false: specific gravity is unitless, not pounds per cubic inch. S2 is true: it is a unitless ratio of a substance's density to water.

40. A — Statement 1 only. S1 is true: grip length should place the shank, not the threads, in shear. S2 is false: grip length is a length, not a thread count.

41. B — Statement 2 only. S1 is false: intergranular corrosion is not surface-only. S2 is true: it attacks along grain boundaries and is often hidden beneath the surface.

42. D — Statement 2 only. S1 is false: a fuse melts and must be replaced, not reset. S2 is true: a circuit breaker can be reset after tripping.

43. D — Statement 2 only. S1 is false: lift opposes weight, not thrust. S2 is true: lift opposes weight in level flight, while thrust opposes drag.

44. A — Statement 1 only. S1 is true: a conversion coating inhibits corrosion and aids paint adhesion. S2 is false: it adds no structural strength.

45. A — Both statements. S1 is true: acceptable data may be used for minor work. S2 is true: approved data is required for major work. The two data categories serve different work classes.

46. D — Statement 2 only. S1 is false: hardening makes a metal less ductile, not more. S2 is true: a hardened metal is more brittle than before hardening.

47. C — Both statements. S1 is true: an open in a series circuit stops all current. S2 is true: a short causes excessive current to flow. The two faults have opposite effects.

48. D — Statement 2 only. S1 is false: 100LL avgas is for piston engines, not turbines. S2 is true: Jet A is for turbine engines.

49. A — Statement 1 only. S1 is true: bonding and grounding before fueling dissipate static. S2 is false: they do not increase the fuel flow rate.

50. C — Statement 2 only. S1 is false: a CG forward of the forward limit makes the aircraft nose-heavy, not tail-heavy. S2 is true: a CG aft of the aft limit reduces stability.

51. C — Statement 2 only. S1 is false: resisting penetration is hardness, not ductility. S2 is true: ductility is the ability to be drawn into wire.

52. B — Statement 1 only. S1 is true: the 100-hour overflight may be up to 10 hours only to reach an inspection site. S2 is false: there is no 50-hour "any reason" allowance.

53. B — Statement 2 only. S1 is false: deburring does not increase wall thickness. S2 is true: deburring removes the burr so the flare seats and flow is unrestricted.

54. A — Statement 1 only. S1 is true: an anodized layer is a thickened oxide that resists corrosion. S2 is false: anodizing is an electrochemical process, not a coat of paint.

55. A — Statement 1 only. S1 is true: an Inspection Authorization permits approving major repairs. S2 is false: mechanics never issue Airworthiness Directives, which come from the FAA.

56. D — Statement 2 only. S1 is false: flaky layers describe exfoliation, not filiform. S2 is true: filiform corrosion appears as wormlike tracks under a finish.

57. C — Statement 2 only. S1 is false: converting electrical energy to mechanical rotation describes a motor. S2 is true: a generator converts mechanical energy to electrical energy.

58. D — Statement 2 only. S1 is false: 7.5 psi is not standard sea-level pressure. S2 is true: standard sea-level pressure is approximately 14.7 psi.

59. D — Statement 2 only. S1 is false: a Safety Data Sheet does not list aircraft weight limits (that is the TCDS). S2 is true: an SDS lists a hazardous material's hazards and handling.

60. C — Statement 2 only. S1 is false: an aircraft over maximum gross weight is not airworthy even with a correct CG. S2 is true: an aircraft must satisfy both weight and CG limits independently.