PRACTICE EXAM 9 SIMULATION (60 QUESTIONS)

1. A mechanic finds total current of 4 amps flowing from a 48-volt source. After finding the total resistance, the mechanic should report it as:

A. 192 ohms

B. 12 ohms

C. 0.083 ohms

D. 52 ohms

2. An aircraft has an empty weight of 1,600 lb at arm 65 in and a 200-lb item added at arm 100 in. After computing the new CG, the result is closest to:

A. 68.9 inches

B. 65.0 inches

C. 82.5 inches

D. 100.0 inches

3. A device operates at 24 volts and 6 amps. After computing its power, then its resistance, the resistance is:

A. 144 ohms

B. 0.25 ohms

C. 4 ohms

D. 30 ohms

4. A mechanic computes a loaded CG of 81 inches against limits of 78 in (forward) and 84 in (aft), then determines the aircraft is:

A. Aft of the aft limit

B. Forward of the forward limit

C. Within the CG range

D. Exactly on the forward limit

5. A two-part epoxy is mixed 100:5 base to hardener. For 60 grams of base, the hardener required, then rounded, is:

A. 3 grams

B. 12 grams

C. 0.083 grams

D. 30 grams

6. A mechanic converts a tube specified as −12 to its outside diameter, then states it as:

A. 12 inches

B. 1/12 inch

C. 12/8 inch

D. 3/4 inch

7. A circuit has a 12-ohm and a 4-ohm resistor in parallel. After reducing them, the total resistance is:

A. 16 ohms

B. 8 ohms

C. 0.33 ohms

D. 3 ohms

8. A mechanic must apply 36 foot-pounds of torque using an inch-pound wrench. After converting, the wrench should be set to:

A. 3 inch-pounds

B. 432 inch-pounds

C. 48 inch-pounds

D. 360 inch-pounds

9. An aircraft weighs 600 lb on the nose scale at arm 25 in and 1,400 lb total on the mains at arm 80 in. After computing the CG, it is closest to:

A. 63.5 inches

B. 52.5 inches

C. 80.0 inches

D. 105.0 inches

10. A mechanic computes 70% of a 60-question exam to find the passing count, then states a candidate who scored 40 correct:

A. Passed with margin to spare

B. Passed exactly at the line

C. Is one question above passing

D. Failed, scoring below the 42 needed

11. A resistor carries 6 amps and dissipates 72 watts. After applying $P = I^2 \times R$, its resistance is:

A. 12 ohms

B. 6 ohms

C. 432 ohms

D. 2 ohms

12. A mechanic converts 100°C to Fahrenheit, then identifies the result as the boiling point of water:

A. 212°F

B. 180°F

C. 132°F

D. 100°F

13. A circular patch must cover a hole of 1-inch diameter. After computing the hole's area ($\pi \approx 3.1416$), it is closest to:

A. 0.79 square inches

B. 3.14 square inches

C. 1.57 square inches

D. 1.00 square inch

14. A mechanic finds an applicable AD not complied with on an aircraft due for an annual. After evaluating airworthiness, the correct determination is the aircraft is:

A. Airworthy because the annual is being done

B. Airworthy if the owner signs a waiver

C. Not airworthy until the AD is complied with and documented

D. Airworthy because the AD is advisory

15. A mechanic removes a 30-lb item at arm 20 in from an aircraft of 2,000 lb and 130,000 in-lb moment. After recomputing, the new weight is:

A. 2,030 lb

B. 2,000 lb

C. 1,970 lb

D. 1,940 lb

16. A mechanic must find the side of a square doubler with an area of 81 square inches. After taking the root, the side is:

A. 40.5 inches

B. 27 inches

C. 18 inches

D. 9 inches

17. A circuit dissipates 144 watts at 12 volts. After computing the current, then the resistance, the resistance is:

A. 0.083 ohms

B. 1,728 ohms

C. 1 ohm

D. 12 ohms

18. A mechanic adds shim stacks of 1/8, 1/4, and 3/8 inch, then states the total:

A. 5/8 inch

B. 1/2 inch

C. 3/4 inch

D. 7/8 inch

19. A mechanic computes the volume of a cylinder with a 2-inch radius and 10-inch height ($\pi \approx 3.1416$), then states it as closest to:

A. 40 cubic inches

B. 63 cubic inches

C. 251 cubic inches

D. 126 cubic inches

20. An aircraft has a total weight of 2,300 lb and a total moment of 161,000 in-lb. After computing the CG, it is:

A. 14.3 inches

B. 161 inches

C. 23 inches

D. 70 inches

21. A mechanic converts 60 pounds to kilograms (1 lb ≈ 0.454 kg), then records the value as closest to:

A. 132.2 kilograms

B. 27.2 kilograms

C. 6.0 kilograms

D. 13.6 kilograms

22. Two 10-ohm resistors are in series, and that pair is in parallel with another 20-ohm resistor. After reducing, the total resistance is:

A. 40 ohms

B. 10 ohms

C. 6.67 ohms

D. 2 ohms

23. A mechanic computes 65% of a 60-question exam, then compares it to the actual 70% passing requirement and concludes 65% would:

A. Fall short of the 42 correct needed to pass

B. Exactly meet the passing requirement

C. Exceed the passing requirement

D. Equal exactly 45 correct answers

24. A landing light draws 6 amps at 28 volts. After computing the power, then the resistance, the resistance is closest to:

A. 168 ohms

B. 4.67 ohms

C. 0.21 ohms

D. 34 ohms

25. A mechanic must find the area of a rectangular patch 9 inches by 7 inches, then states it as:

A. 16 square inches

B. 63 square inches

C. 32 square inches

D. 81 square inches

26. A mechanic evaluates $6 + 2 \times (9 - 4)$ using order of operations, then reports:

A. 40

B. 52

C. 36

D. 16

27. A mechanic finds an aircraft at maximum gross weight but with a CG 2 inches aft of the rear limit. After evaluating, the aircraft is:

A. Airworthy because weight is acceptable

B. Airworthy because aft CG aids stability

C. Not airworthy because the CG is out of limits

D. Airworthy if fuel is below half

28. A mechanic converts 5/16 inch to a decimal, then states it as:

A. 0.500 inch

B. 0.250 inch

C. 0.625 inch

D. 0.3125 inch

29. Three 6-ohm resistors are wired in parallel. After reducing, the total resistance is:

A. 18 ohms

B. 2 ohms

C. 6 ohms

D. 0.5 ohms

30. A hydraulic input piston of 0.25 square inches is pushed with 75 pounds. After computing the pressure, it is:

A. 18.75 psi

B. 75 psi

C. 300 psi

D. 0.003 psi

31. A mechanic computes the moment of a 90-lb item at arm 55 in, then states it as:

A. 4,950 inch-pounds

B. 1.64 inch-pounds

C. 145 inch-pounds

D. 35 inch-pounds

32. A mechanic converts 45°C to Fahrenheit, then reports the result as:

A. 81°F

B. 113°F

C. 97°F

D. 77°F

33. A circuit has 5-ohm, 5-ohm, and 10-ohm resistors in series. After summing, the total resistance is:

A. 2 ohms

B. 20 ohms

C. 2.5 ohms

D. 100 ohms

34. A mechanic must determine the current in a 3-ohm load on a 24-volt source, then state it:

A. 8 amps

B. 72 amps

C. 0.125 amps

D. 27 amps

35. A mechanic finds a part has lost metal beyond the structural limit during corrosion removal, then evaluates the part as:

A. Not airworthy, requiring repair or replacement

B. Airworthy after a conversion coating

C. Airworthy because all corrosion is gone

D. Airworthy after repainting

36. A mechanic computes the volume of a tank 6 × 6 × 6 inches, then states it as:

A. 18 cubic inches

B. 36 cubic inches

C. 216 cubic inches

D. 108 cubic inches

37. A device consumes 84 watts at 28 volts. After computing the current, it is:

A. 0.33 amps

B. 2,352 amps

C. 3 amps

D. 112 amps

38. A mechanic converts 0.875 inch to a fraction, then states it as:

A. 7/8 inch

B. 3/4 inch

C. 5/8 inch

D. 1/2 inch

39. A mechanic computes the area of a circle with a 5-inch radius ($\pi \approx 3.1416$), then states it closest to:

A. 78.54 square inches

B. 31.42 square inches

C. 15.71 square inches

D. 157.1 square inches

40. A mechanic adds 200 lb at arm 90 in to an aircraft of 1,800 lb and 117,000 in-lb moment, then computes the new CG as closest to:

A. 90.0 inches

B. 103.5 inches

C. 58.5 inches

D. 67.5 inches

41. A mechanic must apply 8 foot-pounds of torque with an inch-pound wrench. After converting, the setting is:

A. 0.67 inch-pounds

B. 96 inch-pounds

C. 80 inch-pounds

D. 20 inch-pounds

42. A 9-ohm and an 18-ohm resistor are in parallel. After reducing, the total resistance is:

A. 27 ohms

B. 13.5 ohms

C. 6 ohms

D. 2 ohms

43. A mechanic computes the total weight of an aircraft from scale readings of 700, 900, and 900 lb, then subtracts 30 lb of tare, stating the true weight as:

A. 2,500 lb

B. 2,470 lb

C. 2,530 lb

D. 2,440 lb

44. A mechanic converts a manufacturer's 10-millimeter clearance to inches (1 mm ≈ 0.0394 in), then states it closest to:

A. 0.394 inch

B. 3.94 inches

C. 0.039 inch

D. 25.4 inches

45. A circuit carries 5 amps through a 4-ohm resistor. After computing $P = I^2 \times R$, the power is:

A. 20 watts

B. 100 watts

C. 80 watts

D. 0.8 watts

46. A mechanic computes the loaded CG of an aircraft: empty 1,500 lb at arm 60 in and fuel 300 lb at arm 80 in. The CG is closest to:

A. 60.0 inches

B. 63.3 inches

C. 70.0 inches

D. 80.0 inches

47. A mechanic evaluates $10 - 2 \times 3 + 4$ using order of operations, then reports:

A. 8

B. 28

C. 24

D. 32

48. A resistor dissipates 50 watts across a 5-ohm resistor. After applying $P = E^2 \div R$ to find voltage, then solving, the voltage is closest to:

A. 250 volts

B. 10 volts

C. 0.1 volts

D. 15.8 volts

49. A mechanic finds an aircraft within CG limits but 40 lb over maximum gross weight, then evaluates it as:

A. Not airworthy until the overweight condition is corrected

B. Airworthy because the CG is correct

C. Airworthy if the excess is baggage

D. Within limits because weight is not regulated

50. A mechanic computes the total resistance of a 6-ohm resistor in series with a parallel pair of 8-ohm and 8-ohm resistors. The total is:

A. 14 ohms

B. 8 ohms

C. 10 ohms

D. 6 ohms

51. A mechanic converts 3/4 inch to a decimal, then states it:

A. 0.250 inch

B. 0.500 inch

C. 0.625 inch

D. 0.750 inch

52. A mechanic computes the moment of a 120-lb item at arm 45 in, then states it:

A. 2.67 inch-pounds

B. 165 inch-pounds

C. 5,400 inch-pounds

D. 75 inch-pounds

53. A device draws 2 amps at 24 volts. After computing the power, it is:

A. 12 watts

B. 26 watts

C. 0.083 watts

D. 48 watts

54. A mechanic adds 1/2, 1/8, and 1/8 inch shim stacks, then states the total:

A. 3/14 inch

B. 1/2 inch

C. 3/4 inch

D. 7/8 inch

55. A circuit has a total resistance of 8 ohms across a 24-volt source. After computing current, then power ($P = E \times I$), the power is:

A. 24 watts

B. 192 watts

C. 72 watts

D. 3 watts

56. A mechanic converts 0.500 inch to a fraction, then states it:

A. 1/8 inch

B. 3/8 inch

C. 1/4 inch

D. 1/2 inch

57. A mechanic computes the area of a triangle with a 8-inch base and 5-inch height, then states it:

A. 40 square inches

B. 20 square inches

C. 13 square inches

D. 80 square inches

58. A mechanic must determine the resistance of a 28-volt circuit drawing 7 amps, then state it:

A. 196 ohms

B. 0.25 ohms

C. 4 ohms

D. 35 ohms

59. A mechanic converts 9/16 inch to a decimal, then states it:

A. 0.500 inch

B. 0.625 inch

C. 0.5625 inch

D. 0.4375 inch

60. A mechanic computes 70% of 60 to confirm the passing score, then states the minimum correct answers needed:

A. 42 questions

B. 36 questions

C. 30 questions

D. 48 questions

Answer Key

1. B — 12 ohms. R = E ÷ I = 48 ÷ 4 = 12 ohms. Dividing source voltage by total current gives total resistance.

2. A — 68.9 inches. New moment = (1,600 × 65) + (200 × 100) = 104,000 + 20,000 = 124,000 in-lb; new weight = 1,800 lb; CG = 124,000 ÷ 1,800 ≈ 68.9 inches. Adding an aft item shifted the CG aft.

3. C — 4 ohms. Resistance is R = E ÷ I = 24 ÷ 6 = 4 ohms. (Power here is 24 × 6 = 144 W, but the question asks for resistance.)

4. C — Within the CG range. A CG of 81 inches falls between the 78-inch forward limit and the 84-inch aft limit, so it is within range. The CG must lie within the published limits.

5. A — 3 grams. At a 100:5 ratio, hardener for 60 g of base is (60 × 5) ÷ 100 = 3 grams. Mixing ratios are solved by proportion.

6. D — 3/4 inch. A −12 tube has an OD of 12/16 inch, which reduces to 3/4 inch. The dash number equals the OD in sixteenths.

7. D — 3 ohms. For 12-ohm and 4-ohm resistors in parallel, 1/R = 1/12 + 1/4 = 1/12 + 3/12 = 4/12, so R = 3 ohms. Total parallel resistance is less than the smallest branch.

8. B — 432 inch-pounds. Since one foot-pound equals 12 inch-pounds, 36 × 12 = 432 inch-pounds. Converting before setting the wrench prevents a torque error.

9. A — 63.5 inches. Total moment = (600 × 25) + (1,400 × 80) = 15,000 + 112,000 = 127,000 in-lb; total weight = 2,000 lb; CG = 127,000 ÷ 2,000 = 63.5 inches.

10. D — Failed, scoring below the 42 needed. A 70% passing score on 60 questions requires 42 correct, so 40 correct falls two below the line and fails. The candidate did not reach the passing threshold.

11. D — 2 ohms. From $P = I^2 \times R$, $R = P \div I^2 = 72 \div 36 = 2$ ohms. Rearranging the power formula isolates resistance.

12. A — 212°F. Converting 100°C gives (100 × 1.8) + 32 = 180 + 32 = 212°F, the boiling point of water. The two scales meet at this familiar reference.

13. A — 0.79 square inches. The hole's radius is half its 1-inch diameter, or 0.5 inch, so area = πr^2 = 3.1416 × 0.25 ≈ 0.79 square inches. Using radius in πr^2 is essential.

14. C — Not airworthy until the AD is complied with and documented. An applicable uncomplied AD makes the aircraft unairworthy regardless of the annual being performed. Compliance must be accomplished and recorded.

15. C — 1,970 lb. Removing the 30-lb item reduces total weight: 2,000 − 30 = 1,970 lb. The removed weight is subtracted because it is taken off the aircraft.

16. D — 9 inches. The side of a square equals the square root of its area: $\sqrt{81} = 9$ inches. Taking a root works backward from area to a dimension.

17. C — 1 ohm. First find current: $I = P \div E = 144 \div 12 = 12$ amps; then $R = E \div I = 12 \div 12 = 1$ ohm. This chains power and Ohm's Law.

18. C — 3/4 inch. Converting to eighths: $1/8 + 2/8 + 3/8 = 6/8 = 3/4$ inch. A common denominator is required before adding.

19. D — 126 cubic inches. Cylinder volume is $\pi r^2 h = 3.1416 \times 2^2 \times 10 = 3.1416 \times 40 \approx 126$ cubic inches. Volume is in cubic units.

20. D — 70 inches. CG = total moment ÷ total weight = 161,000 ÷ 2,300 = 70 inches. This single relationship locates the CG.

21. B — 27.2 kilograms. Multiplying 60 pounds by 0.454 gives $60 \times 0.454 \approx 27.2$ kilograms. Accurate conversion prevents recording errors.

22. B — 10 ohms. The two 10-ohm resistors in series give 20 ohms, and 20 ohms in parallel with 20 ohms gives 10 ohms. Reduce the series pair first, then the parallel.

23. A — Fall short of the 42 correct needed to pass. 65% of 60 is 39 correct, which is below the 42 required at the 70% standard, so it would not pass. The passing threshold is 42.

24. B — 4.67 ohms. Resistance is $R = E \div I = 28 \div 6 \approx 4.67$ ohms. (The power here is $28 \times 6 = 168$ W, but the question asks for resistance.)

25. B — 63 square inches. The area of a rectangle is length × width = $9 \times 7 = 63$ square inches. Area is in square units.

26. D — 16. Following order of operations: parentheses ($9 - 4 = 5$), then multiplication ($2 \times 5 = 10$), then addition ($6 + 10 = 16$). Operations out of order give a wrong result.

27. C — Not airworthy because the CG is out of limits. A CG 2 inches aft of the rear limit is out of range, so the aircraft must not be flown until corrected. Being at maximum weight does not excuse an out-of-limit CG.

28. D — 0.3125 inch. Dividing 5 by 16 gives 0.3125. Memorizing common fraction-to-decimal equivalents speeds hardware work.

29. B — 2 ohms. For equal parallel resistors, total resistance equals one value divided by the number: 6 ÷ 3 = 2 ohms. Total parallel resistance is less than the smallest branch.

30. C — 300 psi. Pressure equals force divided by area: P = F ÷ A = 75 ÷ 0.25 = 300 psi. This pressure transmits equally throughout the confined fluid.

31. A — 4,950 inch-pounds. Moment equals weight times arm: 90 × 55 = 4,950 inch-pounds. The moment is what gets summed to locate the CG.

32. B — 113°F. Converting 45°C gives (45 × 1.8) + 32 = 81 + 32 = 113°F. The conversion is a routine application of the formula.

33. B — 20 ohms. In series, resistances add: 5 + 5 + 10 = 20 ohms. There is a single current path, so the values sum.

34. A — 8 amps. From Ohm's Law, I = E ÷ R = 24 ÷ 3 = 8 amps. Dividing voltage by resistance gives the current.

35. A — Not airworthy, requiring repair or replacement. Corrosion removal exceeding the structural limit thins the part below its allowable strength, making it unairworthy. Treating or repainting does not restore the lost material.

36. C — 216 cubic inches. The volume of a cube is side³ = 6³ = 216 cubic inches, or equivalently 6 × 6 × 6. Volume is in cubic units.

37. C — 3 amps. From $P = E \times I$, current is $I = P \div E = 84 \div 28 = 3$ amps. Transposing the power formula isolates current.

38. A — 7/8 inch. Writing 0.875 over its place value gives 875/1000, which reduces to 7/8 inch. Fluent decimal-to-fraction conversion is essential.

39. A — 78.54 square inches. The area of a circle is $\pi r^2 = 3.1416 \times 5^2 = 3.1416 \times 25 \approx 78.54$ square inches. Using radius in πr^2 is essential.

40. D — 67.5 inches. New moment = 117,000 + (200 × 90) = 117,000 + 18,000 = 135,000 in-lb; new weight = 2,000 lb; CG = 135,000 ÷ 2,000 = 67.5 inches.

41. B — 96 inch-pounds. Since one foot-pound equals 12 inch-pounds, 8 × 12 = 96 inch-pounds. Confirming units before setting the wrench prevents errors.

42. C — 6 ohms. For 9-ohm and 18-ohm resistors in parallel, $1/R = 1/9 + 1/18 = 2/18 + 1/18 = 3/18$, so R = 6 ohms. Total parallel resistance is less than the smallest branch.

43. B — 2,470 lb. Summing the scale readings gives 700 + 900 + 900 = 2,500 lb, and subtracting 30 lb of tare yields 2,470 lb. Tare must always be subtracted.

44. A — 0.394 inch. Multiplying 10 millimeters by 0.0394 gives 10 × 0.0394 = 0.394 inch. Accurate conversion prevents machining to the wrong dimension.

45. B — 100 watts. Using $P = I^2 \times R = 5^2 \times 4 = 25 \times 4 = 100$ watts. This form finds power from current and resistance.

46. B — 63.3 inches. Total moment = (1,500 × 60) + (300 × 80) = 90,000 + 24,000 = 114,000 in-lb; total weight = 1,800 lb; CG = 114,000 ÷ 1,800 ≈ 63.3 inches.

47. A — 8. Following order of operations: multiplication first (2 × 3 = 6), then left to right (10 − 6 = 4, then 4 + 4 = 8). Multiplication precedes addition and subtraction.

48. D — 15.8 volts. From $P = E^2 \div R$, $E = \sqrt{(P \times R)} = \sqrt{(50 \times 5)} = \sqrt{250} \approx 15.8$ volts. Rearranging isolates voltage, then the square root gives its value.

49. A — Not airworthy until the overweight condition is corrected. Exceeding maximum gross weight makes the aircraft unairworthy even with an acceptable CG. Both the weight and CG limits must independently pass.

50. C — 10 ohms. The two 8-ohm resistors in parallel give 4 ohms, and that in series with the 6-ohm resistor totals 4 + 6 = 10 ohms. Reduce the parallel group first.

51. D — 0.750 inch. Dividing 3 by 4 gives 0.750. Common fraction-to-decimal equivalents should be memorized.

52. C — 5,400 inch-pounds. Moment equals weight times arm: 120 × 45 = 5,400 inch-pounds. The moment quantifies the turning tendency about the datum.

53. D — 48 watts. Power equals voltage times current: $P = E \times I = 24 \times 2 = 48$ watts. This base formula gives the load directly.

54. C — 3/4 inch. Converting to eighths: 1/2 = 4/8, 1/8 stays, 1/8 stays, giving 4/8 + 1/8 + 1/8 = 6/8 = 3/4 inch. A common denominator is required before adding.

55. C — 72 watts. First find current: $I = E \div R = 24 \div 8 = 3$ amps; then power: $P = E \times I = 24 \times 3 = 72$ watts. This chains Ohm's Law with the power formula.

56. D — 1/2 inch. Writing 0.500 over its place value gives 500/1000, which reduces to 1/2 inch. Fluent decimal-to-fraction conversion is essential.

57. B — 20 square inches. The area of a triangle is one-half base times height: ½ × 8 × 5 = 20 square inches. This formula sizes gussets and triangular reinforcements.

58. C — 4 ohms. From Ohm's Law, R = E ÷ I = 28 ÷ 7 = 4 ohms. Dividing voltage by current gives the resistance.

59. C — 0.5625 inch. Dividing 9 by 16 gives 0.5625. Memorizing common equivalents speeds drawing and hardware work.

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