

# PRACTICE EXAM 3: FULL CFI SIMULATION (Q1-Q150)

---

## FOI BLOCK — Q1-Q50

1. Of the recognized levels of human needs, which one stands at the summit and drives a pilot toward realizing their full potential as an aviator?

- A. Self-actualization, the highest level of the hierarchy
- B. Belonging, related to acceptance by other pilots
- C. Esteem, related to recognition by peers
- D. Security, related to freedom from physical threat

2. A defense mechanism in which the student substitutes a plausible but false reason for the real cause of a poor performance is best identified as:

- A. Projection
- B. Denial
- C. Rationalization
- D. Repression

3. A student who consistently emphasizes their excellent radio work whenever the instructor brings up their poor airspeed control is most clearly exhibiting:

- A. Repression
- B. Compensation
- C. Reaction formation
- D. Displacement

4. Which type of motivation has been shown to be most effective and durable in flight training?
- A. Negative motivation through fear of failure
  - B. External motivation imposed by family or employer
  - C. Positive motivation tied to meaningful reward
  - D. Punitive motivation reinforced by criticism
5. Of the following, which statement most accurately defines learning?
- A. The transfer of factual information from instructor to student
  - B. The memorization of all required procedures and limitations
  - C. A change in behavior as a result of experience
  - D. The completion of a syllabus signed by an authorized instructor
6. Perception, the process by which the brain gives meaning to sensory input, is most directly narrowed by:
- A. A perceived element of threat in the learning environment
  - B. A clear and stated objective for the upcoming lesson
  - C. A natural curiosity about the subject being introduced
  - D. A previously mastered skill that supports the new lesson
7. Of the recognized levels of knowledge, the deepest and most transferable is:
- A. Concept formation that groups understandings into general principles
  - B. Recognition of correct answers from a list of options
  - C. Memorization of facts and definitions
  - D. Repetition of procedures until they become automatic

8. Which of the laws of learning explains why an instructor must teach a maneuver correctly from the very first demonstration?

- A. The law of recency
- B. The law of effect
- C. The law of intensity
- D. The law of primacy

9. A student who consistently performs a procedure exactly as intended, but whose intention reflects a wrong underlying concept, is committing a:

- A. Slip
- B. Mistake
- C. Lapse
- D. Reflex

10. Positive transfer of learning occurs when:

- A. Earlier learning aids the acquisition of a new skill
- B. Earlier learning interferes with the acquisition of a new skill
- C. The student switches instructors during a course
- D. The student is rewarded for completing a difficult lesson

11. Which of the recognized memory stages is the bottleneck most easily overloaded by lengthy or complex briefings?

- A. Sensory memory
- B. Long-term memory
- C. Procedural memory

D. Short-term (working) memory

12. Of the recognized theories of forgetting, the one most consistent with new lessons crowding out earlier learning is:

- A. Disuse
- B. Interference
- C. Repression
- D. Decay

13. Of the three domains of learning, the one most directly addressing values, attitudes, and safety-critical responses is the:

- A. Cognitive domain
- B. Psychomotor domain
- C. Procedural domain
- D. Affective domain

14. A student demonstrates the ability to recite a procedure verbatim but cannot adapt it when conditions change slightly. This indicates a knowledge level of:

- A. Insight
- B. Understanding
- C. Memorization
- D. Concept formation

15. Across the recognized laws of learning, the one most directly explaining why a lesson should end on a genuine success is the law of:

- A. Recency

- B. Primacy
- C. Effect
- D. Exercise

16. A student who is too anxious to learn during the first hour of an extended cross-country flight is operating at which level of the hierarchy of human needs?

- A. Esteem
- B. Self-actualization
- C. Security
- D. Belonging

17. When an instructor allows a student to follow a small error to its natural consequence within safe limits, the instructional principle most directly engaged is the:

- A. Law of effect operating through pleasant outcomes only
- B. Law of primacy reinforcing first impressions of the maneuver
- C. Law of intensity exploiting a vivid teaching moment
- D. Law of exercise through repetitive drill of the error

18. Effective communication has succeeded only when:

- A. The instructor has delivered the message with adequate volume
- B. The student has acknowledged that the message has been heard
- C. The instructor has used the correct technical terminology
- D. The meaning received matches the meaning the instructor intended

19. The single greatest barrier to communication between an instructor and a beginner is:

- A. The use of technical checklists during preflight briefings
- B. The instructor's regional accent or speech patterns
- C. The lack of common experience between the two parties
- D. The instructor's age relative to the student

20. Of the recognized teaching methods, the one best suited to delivering a large body of factual information efficiently is:

- A. The demonstration-performance method
- B. Pure scenario-based training with no other elements
- C. The teaching lecture, especially with audience involvement
- D. The student-led discovery method without instructor input

21. The demonstration-performance method proceeds through the recognized sequence of:

- A. Performance, demonstration, evaluation, explanation
- B. Evaluation, demonstration, performance, explanation
- C. Application, evaluation, explanation, demonstration
- D. Explanation, demonstration, student performance with supervision, evaluation

22. Scenario-based training (SBT) is best described as:

- A. A specific form of problem-based learning organized around a realistic flight scenario
- B. A pure memorization technique applied to checklists and procedures
- C. A grading rubric used during the practical test only
- D. A lecture format using printed scenarios as visual aids

23. The guided discussion method develops student understanding primarily by:

- A. Delivering a one-way flow of information from instructor to student
- B. Requiring students to memorize material before the discussion begins
- C. Showing a video and asking students to summarize it afterward
- D. Drawing knowledge out of the students through skillful questioning

24. Integrated flight instruction is the practice of teaching maneuvers:

- A. Only by outside visual reference until proficiency is achieved
- B. Only by reference to flight instruments until proficiency is achieved
- C. Both by outside visual reference and by reference to flight instruments from the start
- D. With no visual reference at all, relying purely on student intuition

25. Which of the recognized teaching methods is generally most useful for developing student judgment in realistic operating conditions?

- A. Scenario-based training built around a realistic flight scenario
- B. A formal lecture delivered with minimal audience participation
- C. A printed test administered at the end of every ground lesson
- D. A passive video viewing without follow-up discussion

26. The four steps of the teaching process applicable at every scale of instruction are:

- A. Preparation, presentation, application, assessment
- B. Lecture, demonstration, performance, certification
- C. Introduction, development, summary, final examination
- D. Objective, content, evaluation, student feedback

27. A performance-based objective specifies what the student will be able to do, under what conditions, and to what:

- A. Cost in training fees and aircraft rental
- B. Estimated length of the lesson in calendar time
- C. Number of fellow students in the lesson
- D. Criterion that defines acceptable performance

28. A course of training is most usefully organized by:

- A. Following the instructor's interest of the day
- B. Identifying blocks of learning and sequencing them logically
- C. Following a fixed calendar regardless of student progress
- D. Allowing the student to choose the next topic each lesson

29. A flight syllabus differs from a rigid script in that it:

- A. Eliminates the need for any documentation of training progress
- B. Requires FAA approval before each individual lesson can begin
- C. Allows the instructor to adapt pace and sometimes sequence to the student
- D. Is identical for every student in every course of training

30. Within a single lesson, the conclusion exploits which recognized law of learning?

- A. The law of primacy, planting first impressions
- B. The law of exercise, through extended practice
- C. The law of effect, by ending in pleasant feelings
- D. The law of recency, since what is learned last is best remembered

31. Formative assessment is most accurately described as assessment that:

- A. Is conducted only by an FAA examiner during the practical test
- B. Certifies the student has reached the required standard at a milestone
- C. Replaces the need for any other type of assessment
- D. Occurs during instruction and is used to shape ongoing learning

32. Of the recognized characteristics of effective assessment, the one that prevents personal feeling from displacing professional measurement is:

- A. Subjective interpretation by the instructor
- B. Comprehensiveness regardless of objective
- C. Objectivity, focused on performance against the standard
- D. Spontaneity, delivered without preparation

33. Of the recognized question types in oral evaluation, the one most useful for assessing the depth of a student's understanding is:

- A. A yes-or-no question accepted at face value
- B. A follow-up question that probes deeper after the initial answer
- C. A toss-up question thrown to the group at large
- D. A trick question designed to confuse the student

34. The Airman Certification Standards (ACS) integrate which three elements within each task?

- A. Performance, attitude, and presentation under evaluation
- B. Memorization, recall, and recognition under timed conditions
- C. Lecture content, demonstration, and grading by the examiner
- D. Knowledge, risk management, and skill

35. ACS codes printed on a student's Airman Knowledge Test Report are most directly used by the practical test examiner to:

- A. Determine whether to allow the practical test to occur at all
- B. Identify topics that must be revisited during the oral portion
- C. Set the fee charged for administering the practical test
- D. Determine the applicant's overall pilot certificate grade

36. A flight instructor's endorsement on a student's logbook for the practical test is best understood as:

- A. An informal opinion offered as a courtesy without legal force
- B. A summary of how the applicant performed on the most recent stage check
- C. A formal certification that the applicant meets the required standard
- D. A request that the examiner be lenient with the applicant

37. A flight instructor who issues a premature endorsement to please a student or to keep a schedule is most directly:

- A. Acting in the student's true interest by accelerating progression
- B. Demonstrating effective customer service to the flight school
- C. Operating within the bounds of professional discretion
- D. Breaching the trust the instructor's certificate represents

38. A flight instructor's professional development obligations extend:

- A. Only to instructors employed at Part 141 schools
- B. Throughout the instructor's career as the field evolves
- C. Only to the year immediately after initial certification
- D. Only to the period before the first practical test endorsement

39. The PAVE framework identifies risk across four categories. The four are:

- A. Pilot, aircraft, environment, External pressures
- B. Performance, altitude, velocity, energy state
- C. Procedures, airspace, visibility, equipment
- D. Passengers, avionics, ventilation, engineering

40. Aeronautical decision-making (ADM) is best described as:

- A. A systematic approach to consistently determining the best course of action
- B. A regulation that requires written documentation before every flight
- C. A maneuver evaluated only during the multi-engine practical test
- D. An intuitive skill that cannot be taught systematically

41. The five hazardous attitudes recognized by the FAA are anti-authority, impulsivity, invulnerability, macho, and:

- A. Curiosity
- B. Optimism
- C. Frustration
- D. Resignation

42. The hazardous attitude expressed by the thought "It won't happen to me" is best identified as:

- A. Macho
- B. Invulnerability
- C. Anti-authority
- D. Resignation

43. The antidote to the hazardous attitude of macho ("I can do it") is best stated as:

- A. "Follow the rules. They are usually right."
- B. "Not so fast. Think first."
- C. "Taking chances is foolish."
- D. "I'm not helpless. I can make a difference."

44. Single-pilot resource management (SRM) is best described as:

- A. A maneuver evaluated only during the multi-engine practical test
- B. The art of managing all resources available to a pilot operating alone
- C. A regulation requiring two pilots on commercial flights
- D. An optional course offered only to airline transport pilots

45. A flight instructor who consistently models discipline with checklists, weather, and personal minimums is teaching primarily in which domain of learning?

- A. The cognitive domain only
- B. The affective domain
- C. The procedural domain
- D. The psychomotor domain only

46. Of the hazards unique to providing flight instruction, the one that distinguishes the activity from solo flight is:

- A. The aircraft's normal mechanical operation
- B. The use of standard checklists during cruise
- C. The continuous teaching-versus-safety division of attention
- D. The presence of routine pre-flight inspection requirements

47. Crew resource management (CRM) is most accurately described as:

- A. A regulation requiring two pilots on every aircraft
- B. The effective use of all resources to ensure a safe flight
- C. A maneuver evaluated only during the practical test
- D. An optional course for airline transport pilots only

48. Across every Part One chapter of an instructional curriculum, the defining instructor skill is the:

- A. Speed at which the syllabus is completed
- B. Recognition and correction of student errors with diagnosis
- C. Ability to fly each maneuver more precisely than the student
- D. Marketing ability to recruit new students

49. When a student exhibits a defense mechanism response to repeated correction, the most likely cause is:

- A. A medical condition requiring immediate professional evaluation
- B. A lack of basic aptitude that should disqualify the student
- C. A threat to the student's self-esteem triggering an unconscious protective response
- D. A medication interaction with the cockpit environment

50. A flight instructor's signature on a logbook endorsement legally indicates that the instructor has:

- A. Informally observed the student's progress over several lessons
- B. Heard from another instructor that the student appears ready
- C. Discussed the matter with the chief flight instructor of the school
- D. Personally determined the student meets the conditions specified

**FIA BLOCK — Q51–Q150**

51. An airplane has a 1-G stall speed of 50 KIAS. What is its stall speed at a load factor of 2 G?

- A. 50 KIAS
- B. 100 KIAS
- C. 56 KIAS
- D. 71 KIAS

52. Load factor in a level coordinated turn at 60° of bank is:

- A. 1.41 G
- B. 1.15 G
- C. 2.00 G
- D. 4.00 G

53. An airplane has a maximum gross weight of 2,400 lb. Its empty weight is 1,500 lb, and the pilot, passengers, and baggage total 600 lb. How much fuel may be added at 6 lb/gal without exceeding maximum gross weight?

- A. 75 gallons
- B. 100 gallons
- C. 60 gallons
- D. 50 gallons

54. A field at 4,000 feet pressure altitude has an outside temperature of 30°C. Standard temperature at that altitude is approximately 7°C. Density altitude is approximately:

- A. 4,000 feet, since pressure altitude and density altitude are equal

- B. 3,300 feet, slightly lower than the pressure altitude
- C. 6,800 feet, about 2,800 feet above the pressure altitude
- D. 8,500 feet, dramatically higher than the pressure altitude

55. The lift equation states that lift varies with air density, the square of velocity, wing area, and the:

- A. Color of the wing's paint
- B. Coefficient of lift, which depends primarily on angle of attack
- C. Number of passengers aboard the airplane
- D. Time of day and the position of the sun

56. Total drag on a typical light airplane is minimized at the airspeed corresponding to:

- A. The best lift-to-drag ratio in the airplane's current configuration
- B. The never-exceed airspeed at the top of the red line
- C. The maximum structural cruising speed at the top of the green arc
- D. The maximum landing flap extension airspeed

57. Maneuvering speed ( $V_a$ ) at an operating weight below maximum gross weight is:

- A. Significantly higher than published, since the structure is lightly loaded
- B. Identical to the published value, since  $V_a$  depends only on altitude
- C. Slightly higher, because lighter airplanes accelerate slowly to limit G
- D. Lower than published, because lighter airplanes are accelerated more easily

58. The critical angle of attack of a given wing in a given clean configuration is most accurately described as:

- A. Varying directly with operating weight

- B. Decreasing significantly when density altitude rises
- C. Set by the pilot via the airspeed indicator
- D. Essentially constant regardless of weight, bank, or density altitude

59. The first action in the standardized stall recovery sequence is to:

- A. Apply maximum allowable power before any other control change
- B. Roll the airplane into a steep banked turn for energy recovery
- C. Reduce angle of attack by lowering the pitch attitude
- D. Retract all wing flaps to the up position immediately

60. A spin requires which two conditions to be present simultaneously?

- A. Wings-level flight at maneuvering speed and idle thrust
- B. A coordinated turn at maneuvering speed and full power applied
- C. A stalled wing and the presence of yaw producing autorotation
- D. Reduced visibility outside and partial loss of vacuum instruments

61. The PARE spin recovery sequence calls for:

- A. Power smoothly to full takeoff setting before any other change
- B. Power idle, ailerons neutral, rudder opposite the rotation, elevator briskly forward
- C. Power full, aileron with the rotation, rudder neutral, elevator full back
- D. Power reduced, ailerons with the rotation, rudder neutral, elevator full back

62. Spin training in a typical general-aviation airplane is permissible only when the aircraft is:

- A. Specifically certificated for intentional spins

- B. Loaded to its aft center-of-gravity limit
- C. Operated below 1,000 feet AGL
- D. Filled to its maximum gross weight

63. Ground effect can produce which of the following on takeoff?

- A. A significant reduction in apparent lift requiring higher rotation speed
- B. A sudden and pronounced increase in induced drag immediately after liftoff
- C. Premature liftoff at an airspeed too low to sustain climb out of ground effect
- D. An automatic transition into best lift-to-drag cruise without pilot input

64. Wingtip vortices behind a heavy aircraft are strongest when that aircraft is:

- A. Light, dirty, and fast in a high-performance climb
- B. Light, clean, and operating well above maneuvering speed
- C. Heavy, clean (no flaps), and slow on approach or initial climb
- D. Heavy, fully configured for landing, and traveling at high speed

65. During a four-stroke reciprocating engine's operating cycle, the correct sequence of strokes is:

- A. Intake, compression, power, exhaust
- B. Compression, intake, exhaust, power
- C. Power, exhaust, intake, compression
- D. Exhaust, power, compression, intake

66. Carburetor ice can form under which atmospheric conditions?

- A. A wide range of temperatures with visible moisture or high humidity

- B. Cold dry air well below freezing only at high altitude
- C. Hot, dry desert conditions at low density altitude
- D. Only at standard atmospheric conditions with very low humidity

67. During a climb without mixture adjustment, the fuel-air mixture becomes progressively:

- A. Leaner because air density decreases relative to fuel flow
- B. Unchanged because the carburetor automatically compensates
- C. Cleaner due to cooler combustion at altitude
- D. Richer because air density decreases relative to fuel flow

68. A blocked pitot tube with an open static port will cause the airspeed indicator to:

- A. Read consistently lower than true airspeed at every altitude
- B. Read true airspeed only during straight and level flight
- C. Remain stuck at the airspeed at the moment of blockage
- D. Behave like an altimeter, reading high in a climb and low in a descent

69. A blocked static port (with pitot clear) will cause the altimeter and vertical speed indicator to:

- A. Freeze, with the airspeed also becoming unreliable
- B. Continue to function normally with no observable effect
- C. Reverse readings during climb and descent
- D. Display an inverted scale until ground reset is performed

70. Which of the following will raise an airplane's stall speed?

- A. Reducing weight by burning fuel during a long cruise

- B. Extending wing flaps to a full landing position
- C. Operating at a low density altitude near sea level
- D. Increased load factor produced by maneuvering or a steep turn

71. ARROW is the recognized mnemonic for documents required aboard a civil aircraft. The "W" stands for:

- A. Wing identification plate at the leading edge
- B. Wiring diagram of the electrical system
- C. Weight and balance data for the aircraft
- D. Whirl mode certification for the propeller

72. An annual inspection is required for all civil aircraft every:

- A. 12 calendar months from the previous annual
- B. 6 calendar months regardless of utilization
- C. 50 flight hours regardless of calendar time
- D. 24 calendar months at IFR certification cycles

73. A 100-hour inspection is required in addition to the annual when an aircraft is:

- A. Operated only under VFR in good weather
- B. Used for hire or for flight instruction in an instructor-provided aircraft
- C. Stored in a hangar between training flights
- D. Owned by an individual rather than a flight school

74. Which class of airspace requires an explicit ATC clearance to enter?

- A. Class G, in remote uncontrolled areas

- B. Class E, above 14,500 feet MSL by day under VFR
- C. Class B, surrounding the busiest airports
- D. Class D, around typical towered training airports

75. Two-way radio communication must be established before entering which class of airspace?

- A. Class A, in which VFR entry without communication is permitted
- B. Class G, in remote uncontrolled areas
- C. Class C, around moderately busy towered airports
- D. Class E above 14,500 feet MSL during VFR daytime operations

76. Under Part 91, to carry passengers a pilot must have completed three takeoffs and landings within the preceding:

- A. 90 days in the same category, class, and (if a type rating is required) type
- B. 12 calendar months in any aircraft for which the pilot is rated
- C. 24 calendar months in any aircraft regardless of category and class
- D. 30 days in the same category of aircraft regardless of class

77. A flight review under 14 CFR §61.56 must be completed within the preceding:

- A. 6 calendar months and must include 30 minutes of ground training
- B. 36 calendar months and must include 3 hours of ground training
- C. 24 calendar months and must include 1 hour of ground and 1 hour of flight
- D. 12 calendar months and must include a written knowledge test by the FAA

78. A flight instructor's recency-of-experience requirements under 14 CFR §61.197 are evaluated over the preceding:

- A. 6 calendar months and must include monthly recurrent ground training
- B. 24 calendar months with several alternative satisfaction options
- C. 12 calendar months and require an additional checkride annually
- D. 36 calendar months and require a Part 142 training course

79. Section 91.3 establishes the pilot in command as:

- A. Required to share command decisions with passengers when carried
- B. Bound to follow ATC instructions even in declared emergencies
- C. Directly responsible for, and the final authority over, the operation
- D. Permitted to delegate command authority to any qualified passenger

80. Hypoxic hypoxia is caused by:

- A. Insufficient oxygen partial pressure reaching the blood at altitude
- B. Reduced blood oxygen-carrying capacity from carbon monoxide
- C. Inadequate blood circulation due to G-forces or cold
- D. Cellular inability to use oxygen, as caused by alcohol

81. During a night approach over featureless or unlit terrain, the most likely visual illusion is the:

- A. Coriolis illusion produced by head movement in a stabilized turn
- B. Runway-width illusion making a wide runway appear closer than it is
- C. Atmospheric haze illusion making distant objects appear nearer
- D. Black-hole illusion, removing the cues needed to judge height

82. Spatial disorientation is most accurately described as:

- A. A condition fully prevented by adequate cockpit ventilation
- B. A regulatory restriction limited to night VFR flight
- C. A normal sensation that should be ignored without further action
- D. The inability to determine one's position, attitude, and motion relative to earth

83. The IM SAFE personal self-assessment checklist evaluates:

- A. Inspection, maintenance, sealing, airworthiness, fuel, equipment
- B. Illness, medication, stress, alcohol, fatigue, emotion
- C. Instruments, mixture, switches, altimeter, flaps, electrical
- D. Inertia, magnetism, signal, audio, fuel, engine

84. Atmospheric stability is most directly determined by:

- A. The geographic latitude of the air mass
- B. The total amount of water vapor present in the air
- C. The surface elevation beneath the air mass
- D. The lapse rate at which temperature decreases with altitude

85. A cold front typically produces:

- A. A narrow band of intense, brief weather with a sharp wind shift
- B. A wide band of stratus and prolonged steady precipitation
- C. Smooth conditions with unlimited visibility for many hours
- D. Persistent fog with no significant wind shift at passage

86. A warm front typically produces:

- A. A wide band of stratus, prolonged steady precipitation, and low ceilings
- B. A narrow band of intense thunderstorms over a short duration
- C. Cool dry air with scattered fair-weather cumulus only
- D. Severe clear-air turbulence above 20,000 feet MSL

87. During which stage of a thunderstorm's life cycle do updrafts and downdrafts coexist with heavy precipitation, lightning, and the gust front?

- A. The cumulus stage, characterized by building updrafts only
- B. The dissipating stage, dominated by weakening downdrafts
- C. The mature stage, beginning when precipitation reaches the surface
- D. The pre-cumulus stage, marked by clear air and rising temperatures

88. Structural icing requires which two conditions simultaneously?

- A. Visible moisture and aircraft surface temperature at or below freezing
- B. High humidity and outside temperature well above freezing
- C. Light precipitation and a stable atmospheric layer
- D. Smooth airflow and clear skies above the aircraft

89. Thunderstorm development requires three simultaneous ingredients:

- A. Sufficient moisture, an unstable lapse rate, and a lifting mechanism
- B. Stable air, dry conditions, and a gentle vertical motion source
- C. Smooth steady winds, an inversion layer, and clear skies
- D. Cool surface temperatures, low humidity, and high pressure

90. An AIRMET Zulu advises pilots specifically of:

- A. Mountain obscuration affecting VFR operations only
- B. Icing conditions and freezing levels along the route
- C. Strong surface winds and low-level turbulence
- D. Severe convective activity producing thunderstorms

91. A Convective SIGMET specifically advises pilots of:

- A. Routine moderate turbulence at all altitudes along airways
- B. Low-level wind shear advisories at non-towered airports
- C. Severe convective weather including thunderstorms producing tornadoes
- D. Forecast visibilities below 1 mile without precipitation

92. A METAR is most accurately described as:

- A. A routine observation of current weather at an airport
- B. A 24-hour forecast of expected conditions at the airport
- C. A warning of severe convective activity along major airways
- D. A long-range outlook covering an entire flight corridor

93. A pilot report (PIREP) is uniquely valuable because it:

- A. Describes conditions actually encountered in flight by other pilots
- B. Is generated automatically by satellites scanning each system
- C. Replaces the need for METARs and TAFs along the planned route
- D. Provides a binding legal forecast that ATC must enforce

94. During flight planning, the most comprehensive briefing type for a pilot who has received no prior information about the flight is the:

- A. Outlook briefing valid for the next 12 hours
- B. NOTAM-only briefing requested directly from the tower
- C. Abbreviated briefing covering only NOTAMs and ATC delays
- D. Standard briefing covering adverse conditions through NOTAMs

95. Lateral stability — resistance to rolling around the longitudinal axis — is provided primarily by:

- A. The vertical stabilizer acting as a weathervane against yaw
- B. The dihedral angle built into the wings
- C. The elevator trim setting selected for cruise flight
- D. The location of the center of gravity along the longitudinal axis

96. Directional stability — resistance to yawing around the vertical axis — is provided primarily by:

- A. The dihedral angle built into the wings
- B. The elevator trim selected for cruise flight
- C. The horizontal stabilizer and CG location
- D. The vertical stabilizer acting as a weathervane

97. During a level coordinated turn, the force that actually turns the airplane is:

- A. The increased thrust pointed into the turn
- B. The drag from deflected ailerons on the outside wing
- C. The rudder pressure applied in the direction of the turn
- D. The horizontal component of the lift vector when banked

98. Compared to operation at the forward CG limit, an aft CG within the certified envelope produces:

- A. Higher stall speed and easier stall and spin recovery
- B. Lower stall speed and more difficult stall and spin recovery
- C. No measurable change in handling characteristics
- D. A lower never-exceed speed and reduced wing area

99. The mnemonic PAVE for risk identification covers:

- A. Performance, altitude, velocity, energy state
- B. Passengers, avionics, ventilation, engineering
- C. Pilot, aircraft, enVironment, External pressures
- D. Procedures, airspace, visibility, equipment

100. An engine failure in flight calls for the priority of actions captured in which mnemonic?

- A. Communicate, navigate, aviate
- B. Communicate, aviate, navigate
- C. Aviate, navigate, communicate
- D. Navigate, communicate, aviate

101. The first action after an engine failure is to:

- A. Tune the radio to 121.5 and declare an emergency
- B. Pull the mixture to idle cutoff to prevent damage
- C. Establish best-glide airspeed to maximize available time and distance
- D. Open the cabin door immediately for emergency egress

102. A go-around from an unstabilized approach is most accurately described as:

- A. A maneuver requiring explicit ATC clearance at all airports
- B. A normal pilot decision initiated early when needed
- C. An emergency reserved only for the final seconds before touchdown
- D. A failure of approach planning that should be avoided at all costs

103. A crosswind landing using the sideslip (wing-low) method requires the pilot to use:

- A. Aileron away from the wind and rudder in the same direction
- B. Aileron into the wind and rudder opposite to align with the centerline
- C. Rudder only, with the wings held perfectly level throughout
- D. Full back elevator with no rudder input on the rollout

104. In a standard left-traffic pattern, the leg flown parallel to the landing runway but in the opposite direction is the:

- A. Crosswind leg, perpendicular to the departure end of the runway
- B. Upwind leg, climbing away from the departure runway
- C. Downwind leg, parallel to the runway but opposite the takeoff direction
- D. Base leg, perpendicular to the approach end of the runway

105. When teaching ground reference maneuvers, the central principle the student must understand is that:

- A. Wind has no effect on the airplane once airborne
- B. Bank angle should remain constant regardless of wind
- C. The path through the air matters more than the path over the ground
- D. Bank angle must vary with the wind to keep a planned ground track

106. A pilot encounters known icing in an aircraft not approved for flight into known icing. The correct response is to:

- A. Continue at the planned altitude and increase cruise power
- B. Slow to the bottom of the white arc to reduce accretion rate
- C. Exit the icing conditions immediately by altitude or course change
- D. Disable the pitot heat to verify icing severity by airspeed

107. Wing contamination such as frost or ice will most directly cause:

- A. A reduction in stall speed proportional to thickness
- B. Increased stall speed and degraded takeoff and climb performance
- C. No measurable effect, since lift depends only on airspeed
- D. An automatic increase in maneuvering speed limits

108. A microburst encounter on approach typically produces in sequence:

- A. A steady tailwind only with no downdraft component
- B. A persistent right crosswind with no vertical component
- C. Smooth conditions with a gradual airspeed decrease throughout
- D. An increasing headwind, then a powerful downdraft, then a tailwind

109. When teaching a primary student about angle of attack and stall, the most useful conceptual framing is that:

- A. The airplane always stalls at the same angle of attack, but the airspeed at which the wing reaches that angle varies with conditions
- B. The airplane always stalls at the same airspeed regardless of conditions
- C. The airplane stalls only when the throttle is reduced to idle
- D. The airplane stalls only at low altitude near the surface

110. A pilot at high density altitude in a normally aspirated airplane will most directly experience:

- A. Reduced engine power and longer takeoff distance
- B. Improved climb performance due to thinner intake air
- C. Increased maneuvering speed and improved acceleration
- D. Reduced fuel consumption due to leaner mixture at altitude

111. Wake-turbulence avoidance on takeoff behind a heavy aircraft generally calls for the following aircraft to:

- A. Take off as quickly as possible to overtake below the heavy
- B. Take off heading 90 degrees from the heavy's departure heading
- C. Climb directly through the wake at a high angle of attack
- D. Rotate prior to the heavy's rotation point and climb above its flight path

112. Mechanical turbulence is most likely produced by:

- A. A clear stable air mass over level terrain with light winds
- B. Strong winds flowing across irregular terrain or obstacles
- C. A smooth jet stream at high altitude over the open ocean
- D. A high-altitude inversion layer in still atmospheric conditions

113. During night flight, off-center viewing is required because:

- A. The peripheral retina has poor color sensitivity in low light
- B. The central area of the retina is a blind spot in dim light
- C. Off-center viewing is required by FAA regulation for VFR night
- D. Direct viewing causes dark adaptation to fail within seconds

114. Alcohol consumption affects flight safety even after the legal minimum waiting period because:

- A. Lingering effects and hangover symptoms can persist beyond the legal floor
- B. The regulatory waiting period was designed to allow full elimination
- C. Caffeine and alcohol cancel each other out completely
- D. Alcohol's effects pass entirely with adequate sleep

115. A pilot taking an over-the-counter cold medication should recognize that:

- A. The medication is safe for flight because no prescription is required
- B. Over-the-counter status does not mean "safe for flight"
- C. A double dose will clear symptoms more quickly before flight
- D. Such medications are prohibited during the entire calendar year

116. The first action in the standardized stall recovery sequence is to:

- A. Apply maximum allowable power before any other change
- B. Roll the airplane into a steep banked turn for energy recovery
- C. Reduce angle of attack by lowering the pitch attitude
- D. Retract all flaps to the up position immediately

117. An airplane has a maximum gross weight of 2,300 lb. Empty weight is 1,500 lb. The pilot weighs 180 lb and the passenger 170 lb. Baggage is 50 lb. How much fuel may be added at 6 lb/gal without exceeding maximum gross weight?

- A. 66.7 gallons
- B. 70.0 gallons
- C. 75.0 gallons
- D. 80.0 gallons

118. A pilot rolls into a level coordinated turn at 45° bank. Load factor is approximately:

- A. 2.00 G
- B. 1.15 G
- C. 1.41 G
- D. 4.00 G

119. An airplane stalls at 60 KIAS at 1 G. At a load factor of 2 G, it will stall at approximately:

- A. 60 KIAS
- B. 120 KIAS
- C. 85 KIAS
- D. 75 KIAS

120. A pilot computes a takeoff weight 50 pounds above the certified maximum gross weight. The required action is to:

- A. Offload weight to bring the airplane within its certified maximum
- B. Increase rotation airspeed to compensate for the excess weight
- C. Use full flaps regardless of the published configuration recommendation
- D. Add 10% to the published takeoff distance and proceed

121. A constant-speed propeller allows the pilot to:

- A. Eliminate manifold pressure management at altitude
- B. Set RPM independently of throttle position to optimize performance
- C. Operate without any RPM gauge in the cockpit panel
- D. Bypass the magnetos for engine starting in cold conditions

122. A fuel-injected engine is generally immune to carburetor ice but susceptible to:

- A. Magneto failure during normal cruise operations

- B. Vapor lock and a more sensitive hot-start procedure
- C. Sudden electrical system failures during engine start
- D. Excessive prop pitch oscillation at low throttle settings

123. Carburetor heat is applied during the run-up and a slight RPM drop is observed. The drop indicates:

- A. A defective magneto requiring grounded-out troubleshooting
- B. A blocked fuel injection nozzle restricting fuel flow
- C. A failure of the carburetor heat system to deliver warm air
- D. Heated air reaching the carburetor, which is the desired result

124. A magneto check during the engine run-up reveals an RPM drop on one magneto exceeding the manufacturer's allowable maximum. The most likely cause is:

- A. A blocked pitot tube affecting the airspeed indicator only
- B. A faulty ignition component such as fouled plugs or a defective magneto
- C. An over-rich fuel-air mixture due to low density altitude
- D. A normal indication requiring no further action before flight

125. Maneuvering speed ( $V_a$ ) is best defined as the maximum airspeed at which:

- A. The airplane may be flown in any conditions including severe icing
- B. Full deflection of a single control will not exceed the structural limit
- C. The autopilot may remain engaged during all turbulence
- D. Maximum landing flap extension is permitted on final approach

126. A pilot at maneuvering speed ( $V_a$ ) in heavy turbulence is most directly protected from:

- A. Loss of fuel pressure during violent maneuvering events

- B. Inadvertent autopilot disengagement on aileron input
- C. Loss of radio communication with the air traffic controller
- D. Structural damage from full deflection of a single flight control

127. A pilot who relies on airspeed rather than angle of attack to manage stall margins is most likely to be surprised by an accelerated stall in:

- A. A steep coordinated turn at low airspeed
- B. Straight and level cruise well above maneuvering speed
- C. A descent at idle power below the green arc lower limit
- D. A normal takeoff roll prior to rotation airspeed

128. When demonstrating a maneuver to a primary student, the instructor should:

- A. Perform the maneuver exactly to the standard the student must reach
- B. Add deliberate imperfections so the student feels free to err
- C. Skip the explanation phase if time is short on the lesson
- D. Provide commentary unrelated to the maneuver being demonstrated

129. A student demonstrates a base-to-final turn in which the airplane overshoots the runway centerline. The student tightens the turn with bottom rudder, the inside wing drops, and airspeed decays. The instructor should recognize this as:

- A. A normal coordinated turn requiring no further intervention
- B. A standard chandelle entry as taught in commercial training
- C. A safe maneuver fully prevented by the stall warning horn
- D. The classic precursor to a stall-spin accident in the traffic pattern

130. A flight instructor's endorsement on a student's logbook for solo flight in a specific make and model certifies that:

- A. The student has paid all training fees through the end of the rating
- B. The student is the legal minimum age for a commercial certificate
- C. The student has a current first-class medical certificate
- D. The student has received the required training and is proficient to solo that make and model

131. Within an instructor-led lesson, the conclusion exploits which law of learning?

- A. The law of recency, since what is learned last is best remembered
- B. The law of primacy, planting first impressions
- C. The law of intensity, requiring a dramatic finish
- D. The law of exercise, requiring extended practice at the close

132. A flight review under §61.56 must include at least:

- A. 30 minutes of ground training and 30 minutes of flight training
- B. 1 hour of ground training and 1 hour of flight training
- C. 3 hours of ground training and 3 hours of flight training
- D. 6 hours of ground training and no flight time required

133. Required documents that must be aboard a civil aircraft for legal flight are remembered by the mnemonic:

- A. CARES: Certificate, Aircraft data, Registration, Equipment list, Standards
- B. ARROW: Airworthiness, Registration, Radio (when required), Operating limitations, Weight and balance
- C. FREES: Fuel records, Repair records, Equipment, Endorsements, Standards
- D. POWER: Pilot certificate, Operating manual, Weight, Equipment, Registration

134. A pilot reads a forecast indicating an advancing warm front over the planned route at the planned arrival time. The pilot should most expect:

- A. A wide band of stratus, prolonged steady precipitation, and low ceilings
- B. A narrow band of thunderstorms with brief gusty surface winds
- C. Cool dry air with unlimited visibility and fair-weather cumulus
- D. Severe clear-air turbulence at low altitudes only on the final leg

135. Hypoxia symptoms most often degrade a pilot's judgment:

- A. After the pilot has clearly recognized the impairment and acted
- B. Before the pilot recognizes the impairment, which is the danger
- C. Only at altitudes above 25,000 feet, regardless of the individual
- D. After all pilots in the cockpit have donned supplemental oxygen

136. An airplane in a level coordinated turn at  $60^\circ$  of bank stalls at what factor of its 1-G stall speed?

- A. About 0.5 times the 1-G stall speed
- B. The same as the 1-G stall speed
- C. About 1.41 times the 1-G stall speed
- D. About 2.00 times the 1-G stall speed

137. A four-stroke reciprocating engine completes its cycle in which sequence?

- A. Intake, compression, power, exhaust
- B. Compression, intake, exhaust, power
- C. Exhaust, power, compression, intake
- D. Power, exhaust, intake, compression

138. During a climb without mixture adjustment, the fuel-air mixture becomes progressively:

- A. Leaner because air density decreases relative to fuel flow
- B. Unchanged because the carburetor automatically compensates
- C. Richer because air density decreases relative to fuel flow
- D. Cleaner due to cooler combustion at altitude

139. A pilot wishing to fly under VFR at night must ensure the airplane has functioning:

- A. Pitot heat and oxygen system regardless of altitude
- B. Position lights, anti-collision lights, and an electrical source
- C. A second altimeter cross-referenced to the primary altimeter
- D. A constant-speed propeller regardless of engine type

140. A student exhibits the hazardous attitude of resignation ("what's the use?"). The appropriate antidote to teach is:

- A. "Follow the rules. They are usually right."
- B. "I'm not helpless. I can make a difference."
- C. "Taking chances is foolish."
- D. "Not so fast. Think first."

141. A pilot's airman knowledge test report shows a 75% score on the FIA. From the examiner's perspective during the upcoming practical test, this score:

- A. Eliminates the oral portion of the practical test entirely
- B. Has no effect at all on the conduct of the upcoming practical test
- C. Results in a reduced fee for the practical test from the examiner
- D. Increases the number of ACS codes the examiner must revisit during the oral

142. Negative transfer of learning occurs when:

- A. Earlier learning interferes with the acquisition of new learning
- B. The student transitions smoothly between two different airplane types
- C. The student lacks any prior experience related to the new skill
- D. The student is rewarded for completing a particularly difficult lesson

143. An instructor teaching a guided discussion on weather decision-making must anticipate the directions the discussion may take primarily because:

- A. The discussion will eliminate any later need for written assessment
- B. The students will require no prior reading on the topic
- C. The instructor must be ready with questions to steer the exchange
- D. The instructor will use less time than during a lecture format

144. An effective lesson plan is best characterized as:

- A. A rigid script that must be followed lesson-by-lesson with no deviation
- B. A regulatory document submitted to the FAA annually
- C. A list of regulations the student must memorize before any flight training
- D. A flexible guide supporting the lesson's objective and adapting to the student

145. A pilot at high density altitude is most directly experiencing the effects of:

- A. Pressure altitude corrected for non-standard temperature
- B. Indicated altitude corrected for instrument error
- C. True altitude corrected for altimeter setting
- D. Calibrated altitude corrected for compressibility error

146. The instructor's defining task in teaching aeronautical decision-making is to help the student:

- A. Internalize honest hazard recognition and a structured decision habit
- B. Avoid all flights in which weather is forecast to be variable
- C. Memorize a fixed list of right answers for common emergencies
- D. Rely on the instructor's guidance long after the certificate is earned

147. A flight instructor providing instruction in an instructor-provided aircraft must ensure the aircraft has a current:

- A. Annual inspection only, with no additional cycle required
- B. 100-hour inspection only, with no annual inspection required
- C. Pilot certificate only, with no maintenance inspection required
- D. Annual inspection plus a current 100-hour inspection cycle

148. The flight instructor recency rule under 14 CFR §61.197 lives in:

- A. 14 CFR Part 61 Subpart H, governing flight instructors
- B. 14 CFR Part 43, governing maintenance
- C. 14 CFR Part 67, governing medical certification
- D. 14 CFR Part 71, governing the structure of airspace

149. Of the laws of learning, the one that explains why teaching a maneuver correctly the first time is more efficient than fixing it later is the law of:

- A. Recency, since what is learned last is best remembered
- B. Primacy, since what is learned first creates a lasting impression
- C. Effect, since learning is strengthened by pleasant feelings
- D. Exercise, since things repeated are best remembered

150. A pilot operating in icing conditions in an aircraft not certified for flight into known icing should:

- A. Increase cruise power to maintain speed and prevent stalling
- B. Slow to the bottom of the white arc to reduce accretion rate
- C. Disable the pitot heat to verify icing severity by airspeed
- D. Exit the icing conditions immediately by altitude or course change

## PRACTICE EXAM 3 – ANSWER KEY AND EXPLANATIONS

**1. A** — Self-actualization sits at the summit of the hierarchy of human needs, driving a person toward realizing their full potential. Lower needs must be satisfied before this level can drive behavior, which is why a tired or anxious student cannot operate at the self-actualization level no matter how strong their ambition. The instructor manages lower needs first so the student can engage at the top.

**2. C** — Rationalization is the defense mechanism in which a person substitutes a plausible but false reason for the real one behind a poor performance, such as blaming the wind for a control error. It preserves self-esteem by avoiding the genuine cause. Recognizing rationalization signals that the student is protecting themselves from the truth, and the response is to reduce stress rather than argue.

**3. B** — Compensation is the defense mechanism in which a person emphasizes a strength to mask a weakness, such as praising one's radio work to deflect from poor airspeed control. The student is unconsciously protecting self-esteem by redirecting attention. The instructor's response is to address the underlying weakness gently while preserving the student's confidence.

**4. C** — Positive motivation tied to meaningful reward is the most effective and durable form, building confidence and a constructive student-instructor relationship. Negative, external, and punitive forms can produce short-term compliance but breed anxiety and avoidance that corrode learning. Linking each lesson to a reward the student already values is the instructor's leverage.

**5. C** — Learning is defined as a change in behavior as a result of experience. If the student's behavior has not changed, learning has not occurred regardless of how much information was transferred. The definition forces the instructor to evaluate outcomes rather than effort or coverage.

**6. A** — A perceived element of threat narrows perception and blocks learning, because a frightened student fixates and loses the wider picture. Clear objectives, curiosity, and prior mastery all support learning, while only threat actively shuts it down. This is why a threatening instructor is by definition a poor one.

**7. A** — Concept formation, in which understandings are grouped into general principles applicable across many specific situations, is the deepest and most transferable level of knowledge. Memorization is the

shallowest level. Effective instruction moves the student from rote recall toward genuine conceptual mastery that handles unpracticed situations.

**8. D** — The law of primacy states that what is learned first creates the strongest and most lasting impression, which is why an instructor's first demonstration must be performed exactly to standard. A sloppy first demonstration plants a habit that is costly to remove later. Primacy is the operational reason for "get it right the first time" discipline.

**9. B** — A mistake occurs when execution exactly matches intent, but the intent itself was wrong because the underlying concept is mistaken. A slip is the opposite — right plan, wrong execution. The distinction matters because mistakes require re-teaching of the concept while slips need only refined practice.

**10. A** — Positive transfer occurs when earlier learning aids the acquisition of new learning, such as cruise pitch-power mastery helping with approaches. The opposite is negative transfer. Instructors maximize positive transfer by teaching fundamentals thoroughly and pointing out connections to new skills as they arise.

**11. D** — Short-term (working) memory has limited capacity and is easily overloaded by lengthy or complex briefings, making it the bottleneck in instruction. Sensory memory is fleeting; long-term and procedural memory are durable. Respecting the working-memory limit by chunking material is what prevents the student from retaining almost nothing of a long briefing.

**12. B** — Interference is the theory of forgetting in which new or competing learning crowds out earlier learning. Disuse is fading from lack of use; repression is suppression of unpleasant material; decay is a separate mechanism. Recognizing interference helps the instructor separate easily confused topics in the syllabus.

**13. D** — The affective domain addresses values, attitudes, and emotional responses including the safety-critical attitudes an aviator must hold. The cognitive domain covers knowledge and the psychomotor covers motor skills. Effective flight instruction engages all three; neglecting the affective domain produces a technically capable but dangerously attituded pilot.

**14. C** — Memorization is the shallowest level of knowledge: the student can recite verbatim but cannot adapt the procedure to changed conditions because no underlying concept has formed. Understanding and concept formation produce the flexibility the student lacks. The instructor's task is to push past rote recall toward genuine comprehension.

**15. C** — The law of effect states that learning is strengthened by pleasant feelings and weakened by unpleasant ones, which is why ending a lesson on genuine success matters. Recency concerns memory order, primacy first impressions, and exercise repetition. Ending positively is a deliberate application of the law of effect.

**16. C** — A student too anxious to learn is operating at the security level — concerned with safety from threat — which sits below esteem and self-actualization in the hierarchy. Higher-order learning cannot occur until the security need is addressed. The instructor reduces the threat first, then teaches.

**17. C** — The law of intensity holds that vivid, dramatic experiences teach more than dull ones. Allowing a student to experience the natural consequence of a small error within safe limits exploits this law directly. The instructor's judgment lies in distinguishing the error that is a valuable teacher from the one that is a developing hazard.

**18. D** — Communication is the transfer of meaning, and it succeeds only when the meaning received matches the meaning the instructor intended. Volume, acknowledgment, and terminology are means, not the test of success. This is why instructors confirm understanding through questioning rather than assuming a nod equals comprehension.

**19. C** — Lack of common experience is the single greatest barrier to communication, because words mean what experience has taught them to mean and a beginner has not yet built the shared experience that gives technical language meaning. Checklists, accent, and age are real but secondary factors. Building common experience precedes precise vocabulary.

**20. C** — The teaching lecture — with deliberate audience involvement through questioning and discussion — is the most efficient method for delivering a large body of factual information while mitigating the passivity that pure lectures invite. Demonstration-performance is for physical skill; pure SBT and student-led discovery are not best for raw information transfer. The teaching lecture combines efficiency with engagement.

**21. D** — The demonstration-performance method proceeds through explanation, demonstration, student performance with supervision, and evaluation. The sequence mirrors how physical skill is naturally acquired: understand it, see it, do it under guidance, measure against the standard. Reordering or skipping phases weakens the method.

**22. A** — Scenario-based training is a specific form of problem-based learning organized around a realistic flight scenario in which the student applies knowledge and makes decisions in context. Its strength is teaching knowledge, skill, and judgment together rather than as isolated items. SBT is especially valuable for developing ADM and risk-management habits.

**23. D** — The guided discussion method develops understanding by drawing knowledge out of the students through skillful questioning rather than pouring it in. The instructor functions as a facilitator preparing open-ended questions to steer the exchange. The payoff is deep engagement and durable understanding the students construct themselves.

**24. C** — Integrated flight instruction teaches maneuvers both by outside visual references and by reference to flight instruments from the very beginning of training. The student develops instrument cross-check as a habit rather than a late-stage add-on. The method must be applied with care to prevent overdependence on instruments during VFR flight.

**25. A** — Scenario-based training is best suited to developing judgment in realistic operating conditions because it embeds decisions in context the student will actually face. Formal lectures, printed tests, and passive videos do not exercise judgment in the integrated way scenarios do. SBT is the primary vehicle for developing the ADM the FAA emphasizes.

**26. A** — The four steps of the teaching process are preparation, presentation, application, and assessment — a closed, self-correcting cycle applicable at every scale of instruction. Each step is necessary; skipping any one breaks the cycle's discipline. The framework structures a single concept, a single lesson, and an entire course identically.

**27. D** — A performance-based objective specifies what the student will do, under what conditions, and to what criterion that defines acceptable performance. Without the criterion, the objective cannot anchor assessment. The structure ties the lesson plan directly to the completion standards used to evaluate the student.

**28. B** — A course of training is most usefully organized by identifying blocks of learning and sequencing them logically from foundational to advanced. Each block rests on the ones before it. Sequencing by student request, calendar, or instructor interest produces dangerous gaps; blocks-of-learning thinking prevents those gaps.

**29. C** — A training syllabus differs from a rigid script by allowing the instructor to adapt pace and sometimes sequence to the individual student. It provides essential structure and continuity without becoming a straitjacket. Readiness governs progression, not the calendar.

**30. D** — The conclusion of a lesson exploits the law of recency, since what is learned last is best remembered. The introduction engages motivation, development builds known-to-unknown, and the conclusion locks in key points through summary. The full structure deliberately applies the laws of learning to each lesson.

**31. D** — Formative assessment occurs during instruction and is used to shape ongoing learning, distinct from summative assessment that certifies achievement at milestones. Formative assessment is low-stakes and developmental; skilled instructors use it constantly. Reserving assessment for end-points squanders the chance to shape learning as it happens.

**32. C** — Objectivity — focusing on performance against the published standard rather than the instructor's mood or the student's personality — is the characteristic that prevents personal feeling from displacing professional measurement. The ACS exists precisely to make assessment objective and consistent. This is what distinguishes assessment as instruction from criticism as personal commentary.

**33. B** — A follow-up question probes deeper after the student's initial answer, testing the depth of understanding rather than its surface presence. Yes-or-no, toss-up, and trick questions either assess little or actively mislead. Skilled questioning is both an assessment tool and a teaching method.

**34. D** — The Airman Certification Standards integrate knowledge, risk management, and skill elements within each task, refusing to treat them as separate concerns. A competent pilot integrates all three in flight, and the ACS reflects that reality. This integration is the ACS's defining structural feature.

**35. B** — ACS codes on the Airman Knowledge Test Report identify topics the examiner must revisit during the oral portion of the practical test. Every missed written question becomes a guaranteed oral-exam topic. Pilots who score higher hand examiners fewer codes and face shorter, less probing orals.

- 36. C** — An endorsement is a formal certification that the applicant meets the required standard the endorsement references. It is relied upon by the student, the examiner, the FAA, and the flying public. An instructor who signs casually breaches the trust the certificate represents.
- 37. D** — A premature endorsement to please a student or to keep a schedule is a breach of the trust the instructor's certificate represents. It exposes an unprepared pilot to a test or flight they cannot safely manage and exposes the instructor's certificate to consequences. The standard, not the relationship or the schedule, governs every endorsement.
- 38. B** — Professional development is a continuing obligation throughout the instructor's career because aviation knowledge, regulations, technology, and best practices evolve. The certificate is the beginning of professional development, not its endpoint. An instructor who stops learning quickly teaches outdated material and models complacency.
- 39. A** — PAVE identifies risk across Pilot, Aircraft, enVironment, and External pressures — the fourth category covering schedules, expectations, and get-there-itis. The other choices are not recognized aviation risk-management frameworks. External pressures are frequently underweighted in decision-making and drive many accident chains.
- 40. A** — Aeronautical decision-making is the systematic approach pilots use to consistently determine the best course of action in response to a given set of circumstances. It is taught and learned through structured frameworks, not improvised by intuition. ADM is what turns knowledge and skill into safe outcomes.
- 41. D** — The five hazardous attitudes are anti-authority, impulsivity, invulnerability, macho, and resignation ("What's the use?"). Each has a specific paired antidote the pilot consciously substitutes. Curiosity, optimism, and frustration are not on the FAA's recognized list.
- 42. B** — Invulnerability is the hazardous attitude characterized by "It won't happen to me," in which the pilot discounts personal risk despite recognizing the hazard. The antidote is the deliberate substitution of "It could happen to me." Each attitude has a specific antidote tied to its specific thought.
- 43. C** — The antidote to macho ("I can do it") is "Taking chances is foolish." Each hazardous attitude has its specific paired antidote that the pilot consciously substitutes. The FOI and FIA both test these by name and pairing, and instructors must teach the discipline of conscious substitution.
- 44. B** — Single-pilot resource management (SRM) is the art of managing all resources available to a pilot operating alone — inside and outside the cockpit — to ensure flight safety. It encompasses ADM, task management, situational awareness, automation management, and the use of every resource. SRM is the practical discipline through which a lone pilot manages human-factors risk.
- 45. B** — A flight instructor who models discipline with checklists, weather, and personal minimums teaches primarily in the affective domain, where attitudes and habits are formed. The cognitive content of these procedures is straightforward; the durable lesson is the attitude the student absorbs from watching the instructor. Modeling the right attitudes is among the most important and least visible instructor duties.

**46. C** — The hazard unique to instructing is the continuous teaching-versus-safety division of attention that solo pilots never face. The instructor must allow the student enough latitude to learn while standing ready to intervene before any error becomes dangerous. Managing this tension is itself a learned instructor skill.

**47. B** — Crew resource management (CRM) is the effective use of all available resources — human, hardware, and information — to ensure a safe flight. It originated in multi-crew aviation but informs single-pilot operations through SRM. CRM is not a regulation, a maneuver, or an optional course.

**48. B** — Every Part One chapter closes with the recognition and correction of student errors as the defining instructor skill, because this diagnostic discipline — observing accurately, inferring intent, distinguishing slip from mistake, correcting the cause — is what separates an instructor from a pilot who can merely fly. Speed, raw precision, and marketing are not the defining skill. Honest diagnosis applied across hundreds of corrections is.

**49. C** — A defense mechanism response signals that the student's self-esteem is being threatened, triggering an unconscious protective response. Medical referral, aptitude judgment, and medication interaction are not the typical cause. The instructor's response is to reduce stress and rebuild safety, not to press harder.

**50. D** — A flight instructor's signature on a logbook endorsement legally indicates that the instructor has personally determined the student meets the conditions specified by that endorsement. Informal observation, hearsay, and chief-instructor discussion do not substitute for personal determination. The instructor's certificate is on the line with every endorsement.

**51. D** — Stall speed at increased load factor follows  $V_s(n) = V_{s1} \times \sqrt{n}$ . At 2 G, the stall speed is  $50 \times \sqrt{2} \approx 70.71$  KIAS, rounded to 71 KIAS. This accelerated-stall relationship is the reason a steep turn at low airspeed is dangerous, and the FIA tests the math directly.

**52. C** — Load factor in a level coordinated turn depends only on bank angle:  $n = 1/\cos(\text{bank})$ . At  $60^\circ$ ,  $n = 1/\cos(60^\circ) = 1/0.5 = 2.00$  G. The relationship is steep — a  $60^\circ$  turn doubles the load on the wings regardless of weight or airspeed.

**53. D** — Useful load remaining for fuel =  $2,400 - 1,500 - 600 = 300$  lb. At 6 lb/gal, that is  $300 \div 6 = 50$  gallons. Weight-and-balance arithmetic is exam-tested directly, and the discipline of computing before loading prevents overgross takeoffs.

**54. C** — The standard rule-of-thumb formula  $DA \approx PA + 120 \cdot (OAT - OAT_{std})$  at PA 4,000 ft, OAT  $30^\circ\text{C}$ , standard temp  $\sim 7^\circ\text{C}$  yields  $\approx 6,760$  ft, which is closer to option C (6,800 ft)

**55. B** — The lift equation is  $L = \frac{1}{2}\rho V^2 SC_L$ , so lift varies with air density, the square of velocity, wing area, and the coefficient of lift — the variable that depends primarily on angle of attack. Paint color, passenger count, and time of day are not direct variables in lift production. Knowing the lift equation explains why a small airspeed change has a large effect on lift available.

**56. A** — Total drag is minimized at the airspeed corresponding to the best lift-to-drag ratio, where induced and parasite drag intersect on the drag curve. This airspeed produces best glide for distance and the best endurance configurations.  $V_{ne}$ , top of green arc, and maximum flap extension are operational limits, not drag minima.

**57. D** — Maneuvering speed decreases at lighter operating weights, counterintuitively, because a lighter airplane is accelerated more easily by a given aerodynamic force and reaches limit G at a lower airspeed. The heavier the airplane, the higher its  $V_a$ . The FIA tests this weight relationship reliably.

**58. D** — The critical angle of attack of a given wing in a given clean configuration is essentially constant, regardless of weight, bank angle, or density altitude. What varies is the airspeed at which the wing is forced up to that angle. This single concept is the foundation of teaching stalls correctly.

**59. C** — The first action in the standardized stall recovery is to reduce angle of attack by lowering the pitch attitude, because nothing else recovers the wing once it is stalled. Adding power before reducing AOA can deepen the stall through the pitch-up tendency. Rolling wings level and adding power follow only after the wing is unstalled.

**60. C** — A spin requires two conditions simultaneously: a stalled wing and the presence of yaw producing autorotation. Without either ingredient the spin cannot develop. Recognizing the two-ingredient structure makes spin avoidance teachable — break either ingredient and the spin cannot occur.

**61. B** — The PARE recovery sequence is Power idle, Ailerons neutral, Rudder full opposite the rotation, Elevator briskly forward through neutral to break the stall. Each step is necessary and the order matters; the manufacturer's specific procedure for the airplane in use always governs. Aileron use during a spin can aggravate autorotation; the standard is neutral.

**62. A** — Spin training in a typical general-aviation airplane is permissible only when the aircraft is specifically certificated for intentional spins. Spinning a non-spin-certificated aircraft can produce an unrecoverable result. CG must also be within the certified envelope and sufficient altitude available for recovery.

**63. C** — Ground effect can produce premature liftoff at an airspeed too low to sustain climb out of ground effect, because reduced induced drag near the surface produces apparent extra lift. The airplane lifts off but cannot climb away. Recognizing and managing ground effect on takeoff is a primary teaching point.

**64. C** — Wingtip vortices are strongest from heavy, clean (no flaps), and slow aircraft — the configuration of a large jet on approach or initial climb. The strength of the vortex is the source of induced drag and the wake that trails the airplane. Knowing the heavy-clean-slow signature directs wake-avoidance behavior precisely.

**65. A** — A four-stroke reciprocating engine cycle proceeds intake, compression, power, exhaust. Intake draws the mixture in, compression squeezes it, combustion produces the power stroke, and exhaust expels the burned gases. Memorizing the sequence is required for the FIA and supports diagnosing roughness or misfires.

**66. A** — Carburetor ice can form across a wide range of temperatures — including warm days — wherever sufficient moisture and the venturi effect cool the air below freezing inside the carburetor. It is not restricted to obviously cold or freezing conditions. The pilot's defense is carburetor heat applied per the manufacturer's procedure.

**67. D** — As the airplane climbs without mixture adjustment, air density decreases while fuel flow stays roughly the same, producing a progressively richer fuel-air mixture. Leaning restores the correct ratio and recovers efficiency and full available power. This is why mixture management is required cruise procedure at altitude.

**68. D** — A blocked pitot tube with an open static port causes the airspeed indicator to behave like an altimeter — reading higher in a climb (as ambient static decreases while ram pressure is trapped) and lower in a descent. This is the classic blocked-pitot signature the FIA tests reliably. Recognizing it allows the pilot to fall back on pitch-and-power references.

**69. A** — A blocked static port causes the altimeter and vertical speed indicator to freeze and renders the airspeed reading unreliable, because all three pitot-static instruments depend on accurate static pressure. The pilot must use the alternate static source if available. This is the classic blocked-static signature.

**70. D** — Increased load factor — produced by maneuvering or a steep turn — raises the stall speed because the wing must produce more lift and reaches the critical AOA at a higher airspeed. Reduced weight, extended flaps, and low density altitude all lower stall speed. The accelerated stall is a direct consequence of load factor.

**71. C** — In ARROW, the W stands for Weight and balance data, one of the documents required aboard a civil aircraft for legal flight. The other letters are Airworthiness, Registration, Radio station license (when required), and Operating limitations. Wing plate, wiring diagram, and whirl mode certification are not the required document this letter represents.

**72. A** — The annual inspection is required for all civil aircraft every 12 calendar months from the previous annual, performed by an authorized inspector. An airplane without a current annual is not airworthy regardless of other inspections. The 12-calendar-month interval is exam-tested precisely.

**73. B** — A 100-hour inspection is required in addition to the annual when an aircraft is used for hire or for flight instruction in an instructor-provided aircraft. The annual covers the same scope and can substitute for a 100-hour, but a 100-hour cannot substitute for an annual. CFI candidates teaching in their own airplane must keep both cycles current.

**74. C** — Class B airspace, surrounding the busiest airports, requires an explicit ATC clearance to enter. Class C and Class D require two-way radio communication but not clearance per se; Class E and G have no entry communication requirement for VFR. Class B's clearance requirement is the highest VFR entry barrier in the system.

**75. C** — Two-way radio communication must be established with ATC before entering Class C airspace, around moderately busy towered airports with radar approach control. The same rule applies to Class D.

Class A is IFR-only with explicit clearance; Class E above 14,500 ft has no VFR entry-communication requirement.

**76. A** — To carry passengers under Part 91, a pilot must have completed three takeoffs and landings within the preceding 90 days in the same category, class, and (if a type rating is required) type of aircraft. Tailwheel and night passenger carriage add parallel requirements. The 90-day window is exam-tested precisely.

**77. C** — A flight review under §61.56 must be completed within the preceding 24 calendar months and include at least 1 hour of ground training and 1 hour of flight training with an authorized instructor. The review covers Part 91 rules and maneuvers appropriate to the pilot. Certain alternative activities such as the FAA Wings program can satisfy the requirement.

**78. B** — A flight instructor's recency-of-experience requirements under §61.197 are evaluated over the preceding 24 calendar months, with several alternative options for satisfaction including renewal courses, additional rating checkrides, or other approved means. An instructor who fails to satisfy any option may not exercise instructor privileges until reinstated. The 24-month window matches the flight review interval.

**79. C** — §91.3 establishes the pilot in command as directly responsible for, and the final authority over, the operation of the aircraft. In an in-flight emergency, the PIC may deviate from any rule to the extent required to meet the emergency, reporting afterward as required. This authority is paired with full accountability — a defining tension of the PIC role.

**80. A** — Hypoxic hypoxia is caused by insufficient oxygen partial pressure reaching the blood, most commonly from reduced partial pressure at altitude. Hypemic hypoxia involves reduced blood-carrying capacity, stagnant involves circulation problems, and histotoxic involves cellular inability to use oxygen. Hypoxic hypoxia is the form pilots most directly manage through altitude discipline and supplemental oxygen.

**81. D** — The black-hole illusion occurs over featureless or unlit terrain at night, where the visual cues normally used to judge height on approach are missing. Pilots are tempted to descend low, producing landing-short accidents. The defense is reliance on instruments and a stabilized profile rather than the visual sight picture alone.

**82. D** — Spatial disorientation is the inability to determine one's position, attitude, and motion relative to the earth, arising from conflict among the body's orientation senses when visual reference is lost. It is not a sensation to ignore, a regulation, or a ventilation problem. The defense is trusting the flight instruments rather than the body's senses.

**83. B** — The IM SAFE personal self-assessment evaluates Illness, Medication, Stress, Alcohol, Fatigue, and Emotion. It is performed before every flight as an honest self-evaluation. A failed item should produce a no-go decision; teaching the affective habit of acting on the result is the instructor's responsibility.

**84. D** — Atmospheric stability is determined by the lapse rate — the rate at which temperature decreases with altitude. A steep lapse rate favors instability; a shallow or inverted lapse rate favors stability. Latitude,

moisture amount, and surface elevation are separate factors that combine with stability to produce specific weather.

**85. A** — A cold front produces a narrow band of intense, brief weather with a sharp wind shift and temperature drop at frontal passage — cumulus, possible thunderstorms, gusty winds. Warm fronts produce wide bands of prolonged precipitation; smooth conditions and persistent fog do not match the cold-front signature. The narrow-and-intense pattern is uniquely the cold front.

**86. A** — A warm front produces a wide band of stratus, prolonged steady precipitation, and low ceilings extending hundreds of miles ahead of the surface front. Narrow thunderstorm bands are cold-front signatures; cool dry conditions are post-frontal high-pressure signatures. Warm-front weather is less violent but lasts much longer than a cold-front pass.

**87. C** — The mature stage of a thunderstorm begins when precipitation reaches the surface and is the most violent stage because updrafts and downdrafts coexist with heavy rain, lightning, hail, and the strongest gust front. The cumulus stage features updrafts only; the dissipating stage is dominated by weakening downdrafts. Mature-stage cells are unsurvivable for light aircraft attempting penetration.

**88. A** — Structural icing requires two conditions simultaneously: visible moisture (cloud or precipitation) and aircraft surface temperatures at or below freezing. Either alone does not produce icing. Recognizing icing through both requirements lets the pilot identify icing risk across the full range of conditions.

**89. A** — Thunderstorm development requires three simultaneous ingredients: sufficient moisture, an unstable lapse rate, and a lifting mechanism. All three must be present together; removing any one prevents development. Recognizing this lets the pilot anticipate convective activity from forecast weather products.

**90. B** — AIRMET Zulu advises pilots of icing conditions and freezing levels. AIRMET Sierra covers IFR and mountain obscuration; AIRMET Tango covers turbulence and strong surface winds. Each AIRMET type has a defined subject area instructors and pilots must know by name.

**91. C** — A Convective SIGMET advises of severe convective weather — thunderstorms producing severe turbulence, hail, surface winds of 50 knots or more, and tornadoes. It is the strongest convective-weather warning short of a tornado watch. Routine turbulence, wind-shear advisories, and visibility warnings operate at lower thresholds.

**92. A** — A METAR is a routine observation of current weather at an airport, issued hourly with special reports as conditions change. A TAF is the forecast counterpart; warning products and route forecasts differ in purpose. METARs answer the question "what is the weather right now at this airport?"

**93. A** — Pilot reports describe conditions actually encountered in flight by other pilots, uniquely valuable because they confirm or contradict the forecast picture from real airborne experience. They are not satellite-generated, do not replace METARs and TAFs, and are not binding forecasts. Pilots are professionally obligated to make PIREPs as well as read them.

**94. D** — A standard briefing is the comprehensive briefing requested when the pilot has not received prior information about a planned flight. It covers adverse conditions, synopsis, current conditions, forecast en-

route and destination weather, alternates, winds aloft, NOTAMs, and ATC delays. Abbreviated briefings update existing information; outlook briefings cover flights six or more hours away.

**95. B** — Lateral stability — resistance to rolling around the longitudinal axis — is provided primarily by dihedral, the upward angle of the wings from horizontal. Dihedral causes a sideslipping airplane to roll back toward wings-level. Vertical stabilizer provides directional stability; horizontal stabilizer and trim affect longitudinal stability.

**96. D** — The vertical stabilizer acts as a weathervane against yaw, providing directional stability around the vertical axis. Dihedral provides lateral stability; trim and the horizontal stabilizer affect longitudinal stability. Each axis has its own primary stabilizing surface.

**97. D** — In a coordinated turn, the horizontal component of the lift vector — produced when the wings are banked — provides the centripetal force that turns the airplane. The vertical component still supports weight, requiring increased total lift. Neither thrust nor rudder turns the airplane; bank does, with rudder coordinating the turn.

**98. B** — An aft CG within the certified envelope produces lower stall speed (the tail downforce required is reduced, lightening the effective wing load) and more difficult stall and spin recovery. The trade is accepted for a slight cruise gain. Beyond the aft limit, spin recovery may be impossible — the aft limit is the safety-critical boundary.

**99. C** — PAVE identifies risk across Pilot (experience, currency, health, fatigue), Aircraft (airworthiness, performance, equipment), enVironment (weather, terrain, airspace), and External pressures (schedules, expectations). It is a standard risk-management framework taught to all pilots. The other choices are not recognized aviation risk-management mnemonics.

**100. C** — Aviate, navigate, communicate is the priority order during an engine failure: fly the airplane first, navigate to a chosen field second, communicate with ATC third. Reversing this priority has killed pilots who talked on the radio while losing control. The mnemonic is taught as a reflex until it operates without conscious thought.

**101. C** — The first action after an engine failure is to establish best-glide airspeed, maximizing the time and distance available to evaluate options and act. Restart attempts, radio calls, and cockpit preparation follow only after the airplane is flying the optimal glide. Restart actions before establishing the glide consume the pilot's only fixed resource — time aloft.

**102. B** — A go-around is a normal pilot decision that should be initiated early when an approach is not stabilized or predictable. It is not a last-resort emergency, a clearance-requiring maneuver at all airports, or a sign of failure. Teaching the go-around as a default response rather than a desperation prevents many landing-phase accidents.

**103. B** — The sideslip (wing-low) method uses aileron into the wind to control drift and rudder opposite to keep the longitudinal axis aligned with the runway centerline. The result is a controlled slip that tracks the centerline through touchdown. Aileron away from the wind would drift the airplane away from the centerline.

**104. C** — The downwind leg is parallel to the landing runway but flown in the opposite direction, typically at pattern altitude. Upwind is the leg paralleling the runway after departure; crosswind is perpendicular at the departure end; base is perpendicular at the approach end. Knowing the legs by name is required for traffic-pattern operations.

**105. D** — Ground reference maneuvers teach the student that bank angle must vary with the wind component to keep a planned ground track, because the airplane drifts with the wind while the desired path is fixed over the ground. The bank is steepest where groundspeed is highest. This wind-correction discipline is the maneuver's central teaching purpose.

**106. C** — When known icing is encountered in an aircraft not approved for flight into known icing, the only correct response is to exit the icing conditions immediately by altitude or course change. Continuing or slowing increases ice accumulation; disabling pitot heat is dangerous. Avoidance is the defense; exit is the response when avoidance has failed.

**107. B** — Wing contamination — frost or ice — disrupts airflow, reduces the maximum coefficient of lift, raises the stall speed, and degrades takeoff and climb performance. The effect can be dramatic even from a thin layer. All contamination must be removed before flight, regardless of how minor it appears.

**108. D** — A microburst encounter on approach produces, in sequence, an increasing headwind (apparent performance gain), then a powerful downdraft, then a tailwind (performance loss). The pilot's natural reactions — reducing power for the gain, then over-correcting for the sink — are exactly wrong. Avoidance is the only defense for light aircraft.

**109. A** — The most useful framing is that the airplane always stalls at the same angle of attack, but the airspeed at which the wing reaches that angle varies with weight, load factor, density altitude, configuration, and contamination. Teaching stalls as an airspeed event plants a misconception that fails in turns and contamination. AOA-centered thinking is the instructor's most important conceptual move.

**110. A** — A pilot at high density altitude in a normally aspirated airplane experiences reduced engine power (thinner intake air) and longer takeoff distance. Maneuvering speed, climb performance, and fuel consumption do not improve at altitude. The combined power-and-lift reduction is what makes hot-high-humid takeoffs hazardous.

**111. D** — Wake-turbulence avoidance behind a heavy aircraft on takeoff calls for the following aircraft to rotate prior to the heavy aircraft's rotation point and climb above its flight path, staying above the descending wake. Taking off underneath, departing perpendicular, or penetrating at high AOA are unsafe. The principle is to stay above and upwind of where the wake will be.

**112. B** — Mechanical turbulence is produced by strong winds flowing across irregular terrain or obstacles, particularly on the leeward side of mountains and buildings. Stable air over level terrain, smooth jet streams, and inversion layers do not generate mechanical turbulence by their nature. Recognizing it lets the pilot anticipate rough air downwind of terrain features.

**113. B** — Off-center viewing is required at night because the central area of the retina (used for direct viewing) is a blind spot in dim light. Looking slightly off keeps the image on the more light-sensitive

peripheral retina. Peripheral color sensitivity, regulation, and dark adaptation are not the reason for this physiological technique.

**114. A** — Lingering effects and hangover symptoms can persist beyond the legal minimum waiting period after alcohol consumption, impairing a pilot who believes themselves fit. The regulatory waiting period is a legal floor, not a safety guarantee. Alcohol also aggravates hypoxia through histotoxic effects at altitude.

**115. B** — Over-the-counter status does not mean a medication is safe for flight; many cold, allergy, and pain remedies carry warnings against operating machinery that apply fully to flying. The pilot should understand the effects of any substance and the condition it treats before flight. "Available without prescription" is not a clearance for cockpit use.

**116. C** — The first action in the standardized stall recovery is to reduce angle of attack by lowering the pitch attitude, because nothing else recovers the wing once it is stalled. Adding power before reducing AOA can deepen the stall through the pitch-up tendency. The sequence matters: AOA first, then bank level, then power, then drag-device cleanup.

**117. A** — Useful load remaining for fuel =  $2,300 - 1,500 - 180 - 170 - 50 = 400$  lb. At 6 lb/gal, that is  $400 \div 6 \approx 66.7$  gallons. The discipline of computing weight-and-balance honestly for every loaded condition prevents overgross takeoffs.

**118. C** — Load factor in a level coordinated turn at  $45^\circ$  bank is  $n = 1/\cos(45^\circ) = 1/0.707 \approx 1.41$  G. Load factor depends only on bank angle in a level turn, not on weight or airspeed. The accompanying stall speed increase at 1.41 G is the square root of load factor — about 1.19 times the 1-G value.

**119. C** — Stall speed at increased load factor follows  $V_s(n) = V_{s1} \times \sqrt{n}$ . At 2 G, the stall speed is  $60 \times \sqrt{2} \approx 84.85$  KIAS, rounded to 85 KIAS. The same formula governs the accelerated stall at any load factor and is the reason a tight turn at low airspeed is dangerous.

**120. A** — An aircraft loaded above its maximum certified gross weight is not airworthy, and weight must be offloaded to bring it within the certified limit before takeoff. Raising rotation speed, extending flaps, or adding distance to the published number does not legalize an overgross condition. The certified maximum is a structural and safety limit, not a guideline.

**121. B** — A constant-speed propeller allows the pilot to set RPM independently of throttle position, with propeller pitch adjusting automatically to maintain the selected RPM. The pilot manages manifold pressure with the throttle and RPM with the propeller control. This enables optimization of climb, cruise, and descent that a fixed-pitch propeller cannot match.

**122. B** — A fuel-injected engine is immune to carburetor ice because no carburetor is present, but it has its own characteristic concerns including vapor lock and more sensitive hot-start procedures. Each system has unique teaching points the instructor must cover. The trade-off between systems is a recurring FIA topic.

**123. D** — Carburetor heat routes warm air to the carburetor, and a slight RPM drop during the run-up confirms that the heated air is reaching it — the heated air is less dense, producing the expected drop. No drop would suggest the heat system is not functioning. The check verifies the system before it is needed in flight.

**124. B** — An RPM drop on a single magneto exceeding the manufacturer's allowable maximum indicates a faulty ignition component such as fouled spark plugs, defective magneto, or bad lead. It is not normal and requires correction before flight. The dual-magneto design provides flight redundancy, but each must be healthy at run-up.

**125. B** — Maneuvering speed ( $V_a$ ) is the maximum airspeed at which full deflection of a single control will not exceed the airplane's structural limit, because at or below  $V_a$  the wing will stall before structural damage occurs. It is not an icing, autopilot, or flap-extension limit. Above  $V_a$ , a sudden full-deflection input can produce structural damage.

**126. D** — Maneuvering speed ( $V_a$ ) is the maximum airspeed at which full deflection of a single control will not exceed the airplane's structural limit, because at or below  $V_a$  the wing will stall before structural damage occurs. Above  $V_a$ , severe turbulence or sudden control input can produce structural overload. Slowing to  $V_a$  in significant turbulence protects the airplane.

**127. A** — A pilot relying on airspeed rather than AOA is most likely to be surprised by an accelerated stall in a steep coordinated turn at low airspeed, because load factor raises the stall speed above what the airspeed indicator suggests. Cruise, idle descent, and takeoff before rotation are not the surprise scenarios. Teaching AOA-centered thinking prevents this specific surprise.

**128. A** — The instructor's demonstration must be performed exactly to the standard the student is expected to reach, because the law of primacy makes the first model the most enduring. Deliberate imperfections plant errors; off-topic commentary distracts; skipping the explanation breaks the method's sequence. Instructor proficiency in the maneuver being demonstrated is non-negotiable.

**129. D** — A skidding cross-controlled base-to-final turn at low airspeed with the inside wing dropping is the classic precursor to a stall-spin accident in the traffic pattern — among the deadliest fatal-accident profiles in general aviation. It is not a normal turn, a chandelle, or a maneuver the stall horn prevents. The prevention discipline is to recognize the setup and go around.

**130. D** — A solo endorsement certifies that the student has received the required training and is proficient to solo the specific make and model of aircraft, based on the instructor's personal determination. Certificate issuance, age, medical currency, and fee payment are separate matters not certified by this endorsement. The endorsement is the instructor's professional certification of solo readiness.

**131. A** — The conclusion of a lesson exploits the law of recency, since what is learned last is best remembered. The introduction engages motivation, development builds known-to-unknown, and the conclusion locks in key points through summary. The structure deliberately applies the laws of learning to each lesson.

**132. B** — A flight review under §61.56 must include at least 1 hour of ground training and 1 hour of flight training with an authorized instructor. The review must cover Part 91 rules and maneuvers appropriate to the pilot. Completion is logged with the instructor's endorsement.

**133. B** — ARROW captures the required-aboard documents: Airworthiness certificate, Registration, Radio station license (when required), Operating limitations (including the flight manual), and Weight-and-balance data. CARES, FREES, and POWER are not standard mnemonics. The pilot verifies ARROW during preflight; absence makes the flight unlawful.

**134. A** — A warm front produces a wide band of stratus, prolonged steady precipitation, and low ceilings extending hundreds of miles ahead of the surface front. Narrow thunderstorm bands are cold-front signatures; cool dry conditions are post-frontal high-pressure signatures; severe clear-air turbulence is unrelated. The warm-front pattern is less violent but lasts much longer.

**135. B** — Hypoxia degrades judgment before the pilot recognizes the impairment, which is the central danger of the condition. By the time symptoms might prompt concern, the impaired judgment caused by the hypoxia itself may prevent the pilot from acting. The defense is anticipation — oxygen and altitude discipline — not symptom recognition.

**136. C** — Stall speed at increased load factor scales as  $\sqrt{n}$ . At 60° bank in a level turn,  $n = 2.0$  G, so the accelerated stall is  $\sqrt{2} \approx 1.41$  times the 1-G stall speed. This relationship is the reason a steep turn at low airspeed is structurally and aerodynamically dangerous.

**137. A** — A four-stroke reciprocating engine cycle proceeds intake, compression, power, exhaust — repeating continuously across the cylinders. Intake draws the mixture in, compression squeezes it, combustion produces the power stroke, and exhaust expels the burned gases. Memorizing the sequence supports diagnosing roughness and misfires.

**138. C** — As the airplane climbs without mixture adjustment, air density decreases while fuel flow stays roughly the same, producing a progressively richer fuel-air mixture. Leaning restores the correct ratio and recovers efficiency and full available power. This is why mixture management is required cruise procedure at altitude.

**139. B** — VFR night operations require functioning position lights (red, green, white), an anti-collision light system, and an electrical source adequate to power them. Pitot heat is required only for IFR or flight into known icing; a second altimeter and a constant-speed propeller are not VFR night equipment requirements. Equipment list for night VFR is exam-tested directly.

**140. B** — The antidote to resignation ("What's the use?") is "I'm not helpless. I can make a difference." Each hazardous attitude has its specific paired antidote that the pilot consciously substitutes. Recognizing the attitude is half the corrective work; deliberately applying its antidote completes it.

**141. D** — A 75% score on the FIA leaves a relatively large number of ACS codes the examiner must revisit during the oral portion, producing a longer and more probing oral exam. The score does not eliminate the oral, have no effect, or change fees. Higher written scores hand examiners fewer codes.

**142. A** — Negative transfer occurs when earlier learning interferes with the acquisition of new learning, such as a habit appropriate to one aircraft causing errors in another. Smooth transfer between types is positive transfer; absent prior experience is no transfer at all; rewards are unrelated. Anticipating negative transfer helps the instructor anticipate where students will struggle.

**143. C** — The guided discussion method's most important preparation is to anticipate the directions the discussion may take so the instructor is ready with questions to steer the exchange. The method demands more prep than a lecture, not less. Effective facilitation looks effortless precisely because it was prepared.

**144. D** — A lesson plan is a flexible guide that supports the lesson's objective and adapts to the individual student, not a rigid script or regulatory document. It serves the preparation step of the teaching process by ensuring the lesson has a clear objective, organized content, and connections to past and future learning. Flexibility-with-objective is what makes it useful.

**145. A** — Density altitude is pressure altitude corrected for non-standard temperature — the altitude at which the air's density would be found on a standard day. As temperature rises, density falls, and the airplane performs as though at a higher altitude than the altimeter shows. Density altitude drives every performance prediction on the day of flight.

**146. A** — The instructor's defining task in teaching ADM is to help the student internalize honest hazard recognition and a structured decision habit, rather than memorize answers, avoid all variable flights, or rely on the instructor permanently. ADM is built through repeated practice in scenarios where the student must actually decide. The outcome is a pilot who decides honestly under pressure long after the rating is earned.

**147. D** — An aircraft used for hire or for flight instruction in an instructor-provided airplane must have both a current annual inspection (the baseline for all civil aircraft) and a current 100-hour inspection (added for use-for-hire and instructor-provided cases). Neither alone is sufficient. The annual can substitute for a 100-hour, but not vice versa.

**148. A** — The flight instructor recency rule under §61.197 lives in 14 CFR Part 61 Subpart H, which governs flight instructors. Part 43 covers maintenance, Part 67 covers medical, and Part 71 covers airspace structure. Knowing which part governs which subject is foundational regulatory navigation for the FIA.

**149. B** — The law of primacy holds that what is learned first creates the strongest and most lasting impression, which is why teaching a maneuver correctly the first time is more efficient than fixing it later. Unlearning a wrong technique and replacing it is far more costly than teaching correctly from the start. Primacy is the operational reason for "right the first time" discipline.

**150. D** — When known icing is encountered in an aircraft not approved for flight into known icing, the only correct response is to exit the icing conditions immediately by altitude or course change. Continuing, slowing, or disabling pitot heat increases the danger. Avoidance is the defense; exit is the response when avoidance has failed.