PRACTICE EXAM 8 — FULL 125-QUESTION SIMULATION

1. An aircraft is loaded with a total weight of 140,000 lb and a total moment of 95,900,000 in-lb. The CG location aft of the datum is:

A. 600 inches

B. 640 inches

C. 660 inches

D. 685 inches

2. A crew dispatching a domestic Part 121 flight finds the destination forecast for the ±1-hour window around the ETA shows a 1,900-foot ceiling and 5 statute miles visibility. Applying the 1-2-3 rule, the crew must:

A. add an alternate, because the ceiling is below 2,000 feet

B. depart without an alternate, because visibility exceeds 3 miles

C. depart without an alternate, because the window is covered

D. add two alternates for redundancy

3. A crew computing the maximum FDP has a report time of 1000 with two flight segments. Compared with a 0300 report and six segments, this duty period will be:

A. shorter, due to the daytime start

B. identical, since the FDP is fixed

C. longer, due to the favorable start and few segments

D. shorter, due to the low segment count

4. A crew is determining whether an inoperative item permits dispatch. The item is required by regulation and is not listed in the operator's MEL. The aircraft is:

A. dispatchable with a placard and logbook entry

B. dispatchable under the Configuration Deviation List

C. dispatchable at the captain's discretion

D. un-dispatchable until the item is repaired

5. A jet at FL390 in the coffin corner enters a 30° bank. The increased load factor most directly raises the risk of:

A. a Mach tuck pitch-down only

B. an accelerated stall as the stall speed increases

C. a Dutch roll oscillation only

D. a structural failure of the outflow valve

6. A crew loses the left engine at FL410 over mountainous terrain. After setting maximum continuous thrust, the captain slows to L/D MAX to drift down. The net level-off altitude is significant because it:

A. is always exactly 10,000 feet

B. is the highest altitude sustainable on one engine, cleared of terrain by a margin

C. is the altitude where the cabin can repressurize

D. is the altitude assigned automatically by ATC

7. A crew reviewing the takeoff finds an engine fails 2 knots before V1. The correct action is to:

A. reject the takeoff and stop on the runway

B. continue the takeoff and fly the engine-out profile

C. continue only if a clearway is present

D. delay the decision until rotation speed

8. A METAR reports "VV002" in the sky-condition group. This indicates:

A. visibility of 2 statute miles

B. a scattered layer at 200 feet

C. a broken layer at 2,000 feet

D. vertical visibility of 200 feet into an obscuration, which is a ceiling

9. A crew decoding a TAF sees "BECMG 1012 OVC008." This indicates conditions that:

A. fluctuate temporarily for less than an hour each

B. change gradually to the stated conditions between 1000Z and 1200Z

C. change rapidly and completely at 1000Z

D. have a 30 percent probability of occurring

10. A crew briefing for a flight reviews an AIRMET Sierra. This product specifically addresses:

A. moderate icing and freezing levels

B. moderate turbulence and surface winds of 30 knots or more

C. IFR conditions and mountain obscuration

D. thunderstorms and associated severe hazards

11. A crew encounters severe turbulence in clear air at FL400 near a strong jet stream, with nothing on the weather radar. The captain identifies this as clear air turbulence and notes the most effective real-time source for anticipating it is:

A. the airborne weather radar at maximum gain

B. the surface analysis chart

C. pilot reports (PIREPs)

D. the terminal aerodrome forecast

12. A crew descending into the destination encounters freezing rain. The captain identifies it as the most hazardous icing condition because it produces rapid clear ice and indicates:

A. that the icing conditions have ended below

B. an absence of supercooled droplets

C. temperatures well below −30°C

D. a layer of warmer air aloft

13. A crew flying an RNP approach receives an alert that the navigation system can no longer meet the required accuracy. This self-monitoring and alerting capability distinguishes RNP from:

A. basic RNAV without performance monitoring

B. an ILS precision approach

C. a ground-based VOR approach

D. a radar-vectored visual approach

14. A crew at the MDA on a VOR approach reaches the missed approach point without the runway environment in sight. The correct action is to:

A. execute the missed approach procedure

B. descend 100 feet to search for the runway

C. continue to the runway threshold

D. circle below the MDA until the runway appears

15. A crew on an ILS approach reaches the published decision altitude with the approach lights in sight and the aircraft in a position to land. At the DA, the crew:

A. levels off and holds for better cues

B. continues the approach and lands

C. descends an extra 100 feet to confirm

D. executes the missed approach regardless

16. A crew suffers a loss of pressurization at FL370. The immediate first action is to:

A. request a descent from ATC

B. brief the passengers

C. troubleshoot the controller

D. don oxygen masks and establish crew communication

17. A crew responding to a rapid decompression suspected of causing structural damage executes the emergency descent. Given the possible damage, they should:

A. descend at the maximum operating speed regardless

B. maintain cruise altitude until repressurized

C. reduce speed to avoid aggravating the damage

D. extend the gear as the only means of descent

18. A crew encounters a windshear escape situation on final. The captain applies maximum thrust. During the escape, the crew must NOT:

A. follow the flight-director or stick-shaker pitch

B. change the configuration by moving gear or flaps

C. add energy to climb away from the shear

D. maintain wings-level flight

19. A crew detects an engine fire warning after takeoff, past V1. After continuing and completing the memory items, the captain's plan is to:

A. continue to the scheduled destination

B. climb to cruise and finish paperwork first

C. land as soon as possible at a suitable airport

D. hold until the warning extinguishes

20. A pilot reviewing the engine-fire memory items lists closing the thrust lever, cutting off fuel and the engine, and:

A. discharging the fire extinguisher into that engine

B. increasing thrust to blow out the fire

C. restarting the affected engine immediately

D. descending below 10,000 feet first

21. A crew at high altitude stalls during a turbulence encounter. The captain recovers primarily by:

A. applying maximum thrust to power out

B. increasing back pressure to hold altitude

C. banking steeply to unload the wing

D. reducing the angle of attack and accepting altitude loss

22. A crew encounters a microburst on final: the airspeed jumps and the aircraft balloons high. The captain, anticipating the reversal, applies maximum thrust. Reducing power now would be dangerous because moments later they will face:

A. a steady crosswind requiring rudder only

B. continued smooth air

C. an updraft carrying them above the path

D. a sinking tailwind that leaves them low and slow

23. A crew encounters volcanic ash at cruise with fluctuating engine indications. The correct immediate response is to:

A. climb above the ash using maximum thrust

B. continue straight ahead to exit faster

C. reduce thrust and exit the cloud, typically with a 180° turn

D. use weather radar to navigate around it

24. A jet cruises at a true airspeed of 470 knots where the local speed of sound is 587 knots. Its Mach number is approximately:

A. 0.74

B. 0.80

C. 0.85

D. 0.90

25. A crew reviewing the relationship between weight and landing knows that maximum landing weight is normally lower than maximum takeoff weight, limited by:

A. the cabin differential pressure at landing

B. the runway length at the destination

C. the fuel required for a missed approach

D. structural loads absorbed at the certified touchdown rate

26. A pilot reviewing aerodynamics explains that L/D MAX, the speed of minimum total drag, governs maximum range, best glide, and:

A. best engine-out driftdown performance

B. the never-exceed speed in cruise

C. the minimum control speed in the air

D. the maximum operating Mach number

27. A pilot reviewing the takeoff climb explains that the second segment, the most critical, requires a minimum gradient, for a two-engine transport, of:

A. 1.2 percent

B. 2.4 percent

C. 3.0 percent

D. a positive gradient only

28. A crew reviewing the dispatch fuel for a flight requiring an alternate computes destination fuel, fuel to the most distant alternate, and:

A. 45 minutes at normal cruise

B. 30 minutes at holding speed

C. 60 minutes at maximum endurance

D. 90 minutes at best-glide speed

29. A pilot reviewing the certificate framework explains that to act as PIC of a Part 121 flight, a pilot must hold an ATP certificate and:

A. a second-class medical certificate

B. a commercial certificate as backup

C. a first-class medical certificate

D. an ATP-CTP graduation certificate alone

30. A crew reviewing the standard hold knows that above 14,000 feet the inbound leg timing is:

A. 1 minute

B. 1.5 minutes

C. 2 minutes

D. 3 minutes

31. A pilot reviewing the relationship between density altitude and performance at a hot, high-elevation airport explains that high density altitude:

A. increases the wing's coefficient of lift at rotation

B. raises available engine thrust

C. lowers the true airspeed required for liftoff

D. reduces engine thrust and aerodynamic performance

32. A pilot reviewing RVSM explains it provides 1,000-foot vertical separation between:

A. FL290 and FL410

B. FL180 and FL290

C. the surface and FL180

D. FL410 and FL600

33. A pilot reviewing icing protection explains that pitot tubes and static ports are protected from ice by:

A. hot bleed air from the engine compressors

B. pneumatic boots that crack off ice

C. electrical heating elements

D. a weeping chemical anti-icing fluid

34. A crew reviewing the certificate pathways notes a qualifying graduate of an approved four-year aviation degree program may be issued a Restricted ATP at:

A. 1,000 hours

B. 1,250 hours

C. 1,500 hours

D. 750 hours

35. A pilot reviewing pressurization control explains that cabin pressure is regulated primarily by the:

A. inflow rate of bleed air from the packs

B. outflow valve metering air leaving the cabin

C. engine compressor bleed pressure at the source

D. emergency ram-air ventilation door position

36. A crew reviewing weather references explains that winds-aloft forecasts are referenced to true north, while tower-reported surface winds are referenced to:

A. the runway centerline heading

B. the aircraft's gyrocompass

C. grid north at all latitudes

D. magnetic north

37. Using a surface temperature of +15°C and the standard lapse rate of 2°C per 1,000 feet, the approximate temperature at FL320 (32,000 feet) is:

A. −25°C

B. −37°C

C. −49°C

D. −56°C

38. A pilot reviewing the relationship between systems and DC power explains that DC power is produced from AC power by:

A. static inverters

B. the ram air turbine alone

C. transformer rectifier units (TRUs)

D. the engine-driven hydraulic pumps

39. A pilot reviewing the relationship between aerodynamics and high-speed flight explains that Mach buffet is produced by:

A. the yaw damper applying excessive rudder

B. ice accumulating on the wing leading edge

C. fuel sloshing in partially filled tanks

D. airflow separating behind a shock wave and striking the tail

40. A pilot reviewing the relationship between weather and the SIGMET explains that a non-convective SIGMET advises all aircraft of:

A. severe icing, severe turbulence, and volcanic ash

B. moderate icing and freezing levels only

C. IFR ceilings and mountain obscuration

D. thunderstorms exclusively

41. A pilot reviewing the relationship between regulations and operational control explains that in domestic Part 121, operational control is:

A. shared jointly between the PIC and the dispatcher

B. held solely by the captain once airborne

C. delegated entirely to air traffic control

D. retained exclusively by the chief pilot

42. A pilot reviewing the relationship between aerodynamics and the swept wing explains that it tends to stall first at the wingtips, producing a nose-up pitch because the tips are:

A. forward of the center of gravity

B. located aft of the center of gravity

C. over the main landing gear

D. ahead of the leading-edge slats

43. A crew reviewing alternate planning needs an airport served only by a non-precision approach. The standard alternate minimums to list it are:

A. a 600-foot ceiling and 2 statute miles

B. an 800-foot ceiling and 2 statute miles

C. a 400-foot ceiling and 1 statute mile

D. a 1,000-foot ceiling and 3 statute miles

44. A pilot reviewing the relationship between regulations and currency explains that PIC currency for carrying passengers requires, in the same category and class:

A. six instrument approaches within 6 months

B. a flight review within 12 months only

C. three takeoffs and landings within the preceding 90 days

D. a logbook endorsement before each flight

45. A pilot reviewing the jet stream explains that, by definition, its core winds are at least:

A. 25 knots

B. 35 knots

C. 75 knots

D. 50 knots

46. A pilot reviewing automation discipline explains that the correct response to an automation surprise is to:

A. re-engage a higher level of automation

B. disconnect it and hand-fly while diagnosing

C. continue monitoring without intervening

D. cycle the autopilot circuit breaker repeatedly

47. A pilot reviewing the relationship between systems and ice protection explains that wing and engine anti-ice on most jets is provided by:

A. electrical heating elements in the leading edge

B. a chemical fluid weeping through panels

C. pneumatic boots that inflate cyclically

D. hot bleed air ducted through the leading edges and inlets

48. A pilot reviewing the relationship between weather and fronts explains that a cold front, compared with a warm front, produces:

A. a wide area of stratiform clouds and steady rain

B. persistent low ceilings and fog

C. a narrow band of intense, showery weather that clears quickly

D. gradual clearing over many hours

49. A pilot reviewing the relationship between aerodynamics and altitude explains that a climbing jet at constant true airspeed sees its Mach number:

A. increase, because the speed of sound decreases with falling temperature

B. decrease, because density is lower at altitude

C. remain constant, because TAS is unchanged

D. change only if the outside air warms

50. A pilot reviewing the relationship between CRM and workload explains that the dangerous failure mode where a crew neglects to fly the aircraft while absorbed in a problem is called:

A. task saturation or fixation

B. closed-loop communication

C. threat-and-error management

D. a shallow authority gradient

51. A pilot reviewing the certificate framework explains that the ATP aeronautical knowledge requirements are contained in:

A. 14 CFR §91.103

B. 14 CFR §121.333

C. 14 CFR §61.155

D. 14 CFR §135.243

52. A crew reviewing the dispatch release knows it must specify, in addition to route and weather, the alternate(s) and the:

A. names of all cabin crew

B. complete maintenance history

C. expected passenger load factor

D. minimum fuel for the flight

53. A turbojet's actual landing distance on a dry runway is 3,300 feet. Under the 60 percent dry-runway dispatch factor, the minimum effective runway length required is:

A. 3,300 feet

B. 5,500 feet

C. 4,950 feet

D. 6,600 feet

54. A pilot reviewing the relationship between aerodynamics and the drag curve explains that below L/D MAX, the drag component that dominates and increases is:

A. induced drag, which rises as airspeed decreases

B. parasite drag, which rises with the square of velocity

C. wave drag from an early shock wave

D. interference drag, independent of speed

55. A pilot reviewing the relationship between regulations and reduced thrust explains that reduced-thrust takeoffs are prohibited when the runway is:

A. dry but shorter than the balanced field length

B. wet with good braking action

C. contaminated with snow, slush, or standing water

D. at a high-elevation airport

56. A pilot reviewing the relationship between systems and the FMS explains that the FMS determines aircraft position by:

A. relying solely on a single VOR/DME

B. using the standby instruments as the primary reference

C. averaging the crew's manual entries

D. blending sensors such as GPS and inertial reference

57. A pilot reviewing the relationship between weather and pressure systems explains that a low-pressure system in the Northern Hemisphere has air that is:

A. descending and diverging, producing fair weather

B. rising and converging, producing clouds and precipitation

C. circulating clockwise and outward

D. stationary, producing clear skies

58. A pilot reviewing the relationship between aerodynamics and the chordwise airflow explains that the chordwise component on a swept wing is responsible for:

A. triggering compressibility effects over the wing

B. producing most of the lift at low speed

C. relieving wing-bending stress at the root

D. damping the Dutch roll oscillation

59. A pilot reviewing the relationship between regulations and the medical certificate explains that a Part 121 PIC must hold:

A. a second-class medical certificate

B. a first-class medical certificate

C. a third-class medical certificate

D. any class, provided it is current

60. A pilot reviewing the relationship between aeromedical factors and hypoxia explains that hypoxia from carbon monoxide poisoning, where the blood cannot carry oxygen, is classified as:

A. hypoxic hypoxia

B. stagnant hypoxia

C. histotoxic hypoxia

D. hypemic hypoxia

61. A pilot reviewing the relationship between regulations and fatigue explains that the minimum rest before a flight duty period under Part 117 is:

A. 8 hours, with a 6-hour sleep opportunity

B. 9 hours, with a 7-hour sleep opportunity

C. 10 hours, with an 8-hour sleep opportunity

D. 12 hours, with a 10-hour sleep opportunity

62. A pilot reviewing the relationship between systems and emergencies explains that a single hydraulic system loss:

A. leaves controllability via the remaining systems and checklist

B. eliminates all flight control authority

C. requires immediate deployment of the ram air turbine

D. prevents extension of the landing gear by any means

63. An aircraft's CG is at fuselage station 922 inches, with the leading edge of the MAC at station 900 and a MAC length of 100 inches. The CG as a percentage of MAC is:

A. 9.2 percent MAC

B. 92 percent MAC

C. 22 percent MAC

D. 50 percent MAC

64. A pilot reviewing the relationship between aerodynamics and stability explains that the Dutch roll oscillation, common to swept wings, is suppressed by the:

A. Mach trim system

B. stick pusher

C. autothrottle

D. yaw damper

65. A pilot reviewing the relationship between regulations and weather explains that under the 1-2-3 rule, no alternate is required if, within ±1 hour of the ETA, the ceiling is at least:

A. 1,500 feet and visibility 2 statute miles

B. 2,000 feet and visibility 3 statute miles

C. 1,000 feet and visibility 3 statute miles

D. 3,000 feet and visibility 2 statute miles

66. A pilot reviewing the relationship between aerodynamics and design explains that sweep raises the critical Mach number by:

A. increasing the lift produced at low speed

B. eliminating the spanwise airflow entirely

C. lowering the aircraft's structural weight

D. reducing the effective airflow velocity over the wing

67. A pilot reviewing the relationship between regulations and dispatch explains that the dispatcher, working from the ground, has the authority to:

A. assume physical control of the aircraft remotely

B. override ATC clearances during the flight

C. amend or cancel the dispatch release

D. waive the aircraft's airworthiness requirements

68. A pilot reviewing the relationship between aeromedical factors and disorientation explains that the only reliable defense against spatial disorientation is to:

A. trust and fly by reference to the flight instruments

B. rely on bodily sensations of attitude

C. close the eyes momentarily to reset the inner ear

D. increase bank angle to stabilize the inner ear

69. A pilot reviewing the relationship between weather products and hazards explains that an AIRMET Zulu specifically addresses:

A. moderate turbulence and surface winds of 30 knots or more

B. moderate icing and freezing levels

C. IFR conditions and mountain obscuration

D. thunderstorms and associated severe hazards

70. A pilot reviewing the relationship between aerodynamics and the lift equation explains that velocity enters the lift equation as a:

A. square, so doubling speed quadruples available lift

B. linear term, so doubling speed doubles lift

C. cube, so doubling speed multiplies lift eightfold

D. constant unrelated to lift

71. A pilot reviewing the relationship between regulations and the R-ATP explains that a Restricted ATP holder may serve as:

A. pilot-in-command of a Part 121 air carrier flight

B. a designated examiner for ATP applicants

C. a dispatcher with operational control authority

D. second-in-command until reaching 1,500 total hours

72. A pilot reviewing the relationship between systems and the electrical hierarchy explains that when generating capacity is lost, non-essential loads are automatically shed in order to:

A. transfer hydraulic power to the electric pumps

B. preserve power to the essential and battery buses

C. recharge the main battery more quickly

D. increase the total power available

73. A pilot reviewing the relationship between aerodynamics and stall behavior explains that wing fences and vortex generators are installed to:

A. increase the wing's critical Mach number

B. eliminate the need for trailing-edge flaps

C. reduce the swept wing's tendency to stall at the tips first

D. lower the maximum takeoff weight

74. A pilot reviewing the relationship between regulations and the dispatch release explains that in domestic Part 121, the release must be agreed to by:

A. the captain alone

B. both the pilot-in-command and the dispatcher

C. the chief pilot and the FAA

D. air traffic control and the dispatcher

75. A pilot reviewing the relationship between weather and fog explains that radiation fog, unlike advection fog, forms in:

A. calm conditions overnight and burns off with daytime heating

B. windy conditions over a cool surface

C. warm moist air moving over a cooler surface

D. warm rain falling through cooler air

76. A pilot reviewing the relationship between aerodynamics and the chordwise airflow explains that the chordwise component crosses the wing perpendicular to the leading edge, which is where airflow:

A. relieves wing-bending stress

B. produces all of the wing's lift

C. accelerates to local Mach 1.0, triggering compressibility

D. damps the Dutch roll oscillation

77. A pilot reviewing the relationship between regulations and the certificate age explains that an unrestricted ATP applicant must be at least:

A. 18 years old

B. 21 years old

C. 25 years old

D. 23 years old

78. A pilot reviewing the relationship between aeromedical factors and altitude explains that passenger oxygen masks typically deploy automatically at a cabin altitude of approximately:

A. 8,000 feet

B. 10,000 feet

C. 18,000 feet

D. 14,000 feet

79. A pilot reviewing the relationship between aerodynamics and stability explains that an aft (but legal) CG provides a small benefit of:

A. a higher stall speed for safety margin

B. greater longitudinal stability in pitch

C. slightly improved cruise fuel efficiency

D. an inability to rotate at the normal speed

80. A pilot reviewing the relationship between regulations and the takeoff distances explains that a clearway at the departure end of a runway extends the:

A. accelerate-stop distance available (ASDA)

B. takeoff distance available (TODA)

C. landing distance available (LDA)

D. takeoff run available (TORA)

81. A pilot reviewing the relationship between weather and stability explains that stable air, resisting vertical motion, produces:

A. cumuliform clouds, turbulence, and showers

B. towering cumulus and good visibility

C. stratiform clouds, smooth air, and poor visibility

D. rapidly building thunderstorms

82. A pilot reviewing the relationship between regulations and the certificate pathways notes a qualifying military pilot may be issued a Restricted ATP at:

A. 750 hours

B. 1,000 hours

C. 1,250 hours

D. 1,500 hours

83. A pilot reviewing the relationship between systems and bleed air explains that bleed air is a shared resource used for pressurization, anti-ice, and:

A. driving the hydraulic engine-driven pumps

B. engine starting

C. charging the main aircraft battery

D. powering the navigation displays

84. A pilot reviewing the relationship between aerodynamics and the takeoff decision speed explains that V1 is best described as the:

A. maximum speed at which a reject can still safely stop the aircraft

B. speed at which the nose is raised to the takeoff attitude

C. minimum single-engine climb speed at 35 feet

D. speed at which the landing gear must be retracted

85. A pilot reviewing the relationship between weather products and the GFA explains that the Graphical Forecasts for Aviation is:

A. an hourly coded surface observation

B. a 24-hour terminal forecast for one airport

C. a single static chart valid at one time

D. the primary interactive graphical briefing tool for the U.S.

86. A pilot reviewing the relationship between aerodynamics and rotation explains that VR, the rotation speed, is always:

A. less than V1 to ensure an early liftoff

B. equal to V2 at the screen height

C. independent of takeoff weight

D. equal to or greater than V1

87. A pilot reviewing the relationship between regulations and the convective product explains that a Convective SIGMET, valid for 2 hours, automatically implies:

A. mountain obscuration and IFR ceilings

B. light icing at the freezing level only

C. severe turbulence, severe icing, and low-level wind shear

D. volcanic ash lowering visibility

88. A pilot reviewing the relationship between aerodynamics and the engine-out cruise explains that a twin cannot maintain cruise altitude on one engine because the available thrust is:

A. insufficient to sustain level flight, requiring a driftdown

B. exactly equal to the thrust required for level flight

C. more than sufficient to continue climbing

D. unaffected by the loss of one engine

89. A pilot reviewing the relationship between regulations and risk explains that risk is assessed by combining:

A. the time and cost of mitigation

B. the likelihood and the severity of the hazard

C. the convenience and effort required

D. the distance and fuel remaining

90. A pilot reviewing the relationship between weather and the winds aloft forecast explains that a coded group of "9900" indicates wind that is:

A. from 099° at 100 knots

B. light and variable, less than 5 knots

C. calm with zero movement

D. from due north at 99 knots

91. A pilot reviewing the relationship between regulations and the MEL explains that an operator's MEL, relative to the Master MEL, may be:

A. less restrictive with a waiver

B. identical only, with no variation

C. more restrictive, but never less

D. ignored if the captain deems an item minor

92. A fuel load of 4,500 gallons at a density of 6.7 pounds per gallon weighs:

A. 26,800 pounds

B. 33,500 pounds

C. 27,000 pounds

D. 30,150 pounds

93. A pilot reviewing the relationship between aeromedical factors and hypoxia explains that hypoxia from impaired blood circulation, such as pooling under G-forces, is classified as:

A. hypoxic hypoxia

B. stagnant hypoxia

C. histotoxic hypoxia

D. hypemic hypoxia

94. A pilot reviewing the relationship between aerodynamics and the lift equation explains that as air density falls with altitude, to maintain the same lift the wing must:

A. fly at a higher true airspeed for a given indicated airspeed

B. reduce its true airspeed proportionally

C. mechanically increase its wing area

D. reduce its angle of attack to zero

95. A pilot reviewing the relationship between regulations and currency explains that instrument currency requires, within the preceding 6 calendar months, six approaches, holding, and:

A. two precision approaches in actual conditions

B. a logged instrument proficiency check

C. intercepting and tracking courses using navigation systems

D. 10 hours of actual instrument time

96. A pilot reviewing the relationship between weather and icing explains that the most dangerous form of structural icing is:

A. rime ice from small droplets in colder air

B. frost forming overnight on a parked aircraft

C. a trace of mixed ice in thin stratiform cloud

D. clear (glaze) ice from large supercooled droplets and freezing rain

97. A pilot reviewing the relationship between regulations and the STAR explains that a Standard Terminal Arrival Route transitions an aircraft from:

A. the en route structure to the approach environment

B. the runway to the en route structure

C. one airway to a parallel airway

D. the holding fix to the missed approach point

98. A pilot reviewing the relationship between aerodynamics and the takeoff climb explains that the first segment extends from liftoff until the:

A. aircraft reaches 1,500 feet AGL

B. flaps reach the en route setting

C. landing gear is fully retracted

D. final climb speed is reached

99. A pilot reviewing the relationship between regulations and the cabin-altitude warning explains that it typically activates at a cabin altitude of approximately:

A. 6,000 feet

B. 10,000 feet

C. 14,000 feet

D. 18,000 feet

100. A pilot reviewing the relationship between systems and pressurization explains that the limiting structural parameter is the:

A. maximum differential pressure between cabin and outside

B. absolute cabin altitude regardless of outside pressure

C. total airflow delivered by the packs

D. rate of cabin altitude change during climb only

101. A pilot reviewing the relationship between aerodynamics and the second segment explains that the second-segment climb gradient is most often the:

A. least restrictive of all climb segments

B. only segment with no gradient requirement

C. limiting factor for the maximum takeoff weight

D. segment flown after the flaps are fully retracted

102. A pilot reviewing the relationship between regulations and the dispatch release explains that the flight may not depart without:

A. a passenger manifest signed by the gate agent

B. an ATC clearance matching the release exactly

C. the chief pilot's personal signature

D. a valid release agreed to by both the captain and the dispatcher

103. A pilot reviewing the relationship between aerodynamics and high-altitude stall explains that the high-altitude stall recovery, unlike at low altitude, prioritizes:

A. applying maximum thrust to power out

B. maintaining altitude while increasing back pressure

C. banking steeply to unload the wing

D. reducing the angle of attack and accepting altitude loss

104. A pilot reviewing the relationship between weather and CAT explains that clear air turbulence is most severe on the:

A. cold (polar) side of the jet stream, near the core

B. warm (equatorial) side of the jet stream

C. surface beneath the jet stream

D. far downstream edge of the jet stream

105. A pilot reviewing the relationship between systems and DC power explains that static inverters are used to:

A. convert AC power to DC for the avionics

B. convert battery DC to AC for essential AC instruments in an emergency

C. drive the hydraulic engine-driven pumps

D. provide engine bleed air for anti-ice

106. A pilot reviewing the relationship between aerodynamics and efficiency explains that the most fuel-efficient long-range cruise involves climbing to higher altitudes as fuel burns off, a procedure called the:

A. driftdown profile

B. step climb

C. optimized profile descent

D. cruise-descent transition

107. A pilot reviewing the relationship between regulations and the approach explains that a Decision Altitude is used on approaches providing:

A. lateral guidance only with stepdown fixes

B. radar vectors to a visual final segment

C. circling guidance to a non-aligned runway

D. vertical guidance, such as an ILS or LPV

108. A pilot reviewing the relationship between aerodynamics and the drag curve explains that at L/D MAX, the aircraft achieves the most efficient performance because:

A. total drag is at its minimum and lift-to-drag is greatest

B. parasite drag is reduced to zero

C. induced drag is at its maximum

D. the engines produce maximum continuous thrust

109. A pilot reviewing the relationship between regulations and the certificate explains that the ATP certificate is governed by:

A. 14 CFR Part 121

B. 14 CFR Part 91

C. 14 CFR Part 61

D. 14 CFR Part 135

110. A crew decodes a high-level winds aloft group "784850" and recognizes the wind exceeds 100 knots. The direction-and-speed portion "7848" decodes to:

A. 078° at 48 knots

B. 178° at 148 knots

C. 280° at 148 knots

D. 028° at 148 knots

111. A pilot reviewing the relationship between weather and the temperature inversion explains that an inversion is a layer in which temperature:

A. decreases rapidly, producing instability

B. increases with altitude, producing very stable air

C. remains constant, producing neutral stability

D. oscillates, producing alternating cloud layers

112. A pilot reviewing the relationship between systems and ram air explains that the ram air turbine (RAT):

A. provides cabin pressurization air during cruise

B. cools the air conditioning packs

C. supplies bleed air for wing anti-ice

D. provides emergency hydraulic and/or electrical power when normal sources fail

113. A pilot reviewing the relationship between aerodynamics and the moist adiabatic lapse rate explains that it is lower than the dry rate because:

A. condensation releases latent heat that partly offsets cooling

B. saturated air is denser and cools faster

C. the moist rate applies only above the tropopause

D. water vapor speeds the temperature decrease

114. A pilot reviewing the relationship between regulations and the takeoff distances explains that a stopway extends the:

A. takeoff distance available (TODA)

B. accelerate-stop distance available (ASDA)

C. landing distance available (LDA)

D. takeoff run available (TORA)

115. A pilot reviewing the relationship between CRM and communication explains that closed-loop communication means that:

A. the receiver confirms the message so the sender knows it was understood

B. only the captain may issue operational commands

C. radio calls are made by the pilot flying only

D. communication is limited to essential ATC exchanges

116. A pilot reviewing the relationship between aerodynamics and engine indications explains that the primary thrust-setting parameter on most high-bypass turbofans is:

A. exhaust gas temperature (EGT)

B. high-pressure spool speed (N2)

C. fuel flow to the combustor

D. fan or low-pressure spool speed (N1)

117. A pilot reviewing the relationship between regulations and emergency descent explains that during an emergency descent after an explosive decompression with suspected structural damage, the crew should:

A. descend at the maximum operating speed regardless

B. reduce speed to avoid aggravating the damage

C. maintain cruise altitude until repressurized

D. extend the gear as the only means of descent

118. A pilot reviewing the relationship between aerodynamics and the engine-out climb explains that maximum continuous thrust is the:

A. time-limited maximum used only for takeoff

B. idle thrust setting used in descent

C. highest thrust permitted for unlimited duration

D. thrust automatically reduced by the autothrottle

119. A pilot reviewing the relationship between weather and thunderstorms explains that hail and severe turbulence can be encountered:

A. only within the visible precipitation core

B. only above the anvil at the storm top

C. in clear air beneath and beside the storm

D. exclusively during the dissipating stage

120. A pilot reviewing the relationship between regulations and the DECIDE model explains that the model is a continuous loop ending in:

A. evaluate the effect of the action taken

B. eliminate all remaining risk

C. execute the chosen procedure

D. endorse the decision in the logbook

121. A weight of 7,500 lb is shifted 160 inches on an aircraft with a total weight of 150,000 lb. The CG moves:

A. 6 inches

B. 10 inches

C. 12 inches

D. 8 inches

122. A pilot reviewing the relationship between aerodynamics and Mach tuck explains that Mach tuck is:

A. a coupled roll-yaw oscillation near the tropopause

B. airframe vibration from separated airflow

C. a nose-down pitch from the rearward shift of the center of lift

D. an uncommanded roll at high Mach

123. A pilot reviewing the relationship between regulations and the hazardous attitudes explains that the antidote to the "macho" attitude ("I can do it") is:

A. it could happen to me

B. follow the rules; they are usually right

C. not so fast; think first

D. taking chances is foolish

124. A pilot reviewing the relationship between weather and the winds aloft forecast explains that no wind or temperature is forecast for a level within:

A. 500 feet of the station elevation

B. 1,500 feet of the station elevation

C. 3,000 feet of the station elevation

D. 5,000 feet of the station elevation

125. A pilot reviewing the relationship between systems and pressurization explains that typical cruise cabin altitude on a transport at high cruise is maintained around:

A. 6,000 to 8,000 feet

B. sea level to 2,000 feet

C. 10,000 to 12,000 feet

D. equal to the actual flight altitude

Answer Key

1. D — CG equals total moment ÷ total weight: 95,900,000 ÷ 140,000 = 685 inches aft of datum. This division is the core of every weight-and-balance computation.

2. A — Under the 1-2-3 rule, an alternate is required because the 1,900-foot ceiling is below the 2,000-foot minimum, even though visibility exceeds 3 miles. Both thresholds must be met to skip the alternate.

3. C — A 1000 report with two segments yields a longer FDP than a 0300 report with six segments, because both a favorable daytime start and few segments reduce fatigue. The FDP is a variable, not a fixed value.

4. D — An item required by regulation and not listed in the MEL makes the aircraft un-dispatchable until repaired. The MEL authorizes only the deferrals it specifically lists.

5. B — Increasing load factor in a 30° bank raises the stall speed, narrowing the already tiny coffin-corner margin and risking an accelerated stall. The convergence of stall and Mach limits makes this dangerous.

6. B — The net level-off altitude is the highest altitude sustainable on one engine, cleared of terrain by a regulatory margin. Driftdown at L/D MAX maximizes this altitude.

7. A — An engine failure recognized before V1 means there is still runway to reject and stop, so the takeoff is rejected. At or after V1 it must be continued.

8. D — "VV002" is vertical visibility of 200 feet into an obscuration, which counts as a ceiling. It is not a visibility, scattered, or broken report.

9. B — A TAF "BECMG" group indicates a gradual change to the stated conditions over the stated window (1000Z–1200Z). FM is a rapid complete change, TEMPO is brief fluctuation, and PROB is a probability.

10. C — AIRMET Sierra specifically addresses IFR conditions (ceilings/visibility) and mountain obscuration. Tango covers turbulence and wind; Zulu covers icing.

11. C — Clear air turbulence is invisible and radar-undetectable, so PIREPs are the best real-time source for anticipating it. Forecasts help, but direct pilot reports are the most valuable.

12. D — Freezing rain indicates a layer of warmer air aloft and produces rapid clear ice, making it the most hazardous icing condition. It signals worsening, not improving, conditions.

13. A — RNP's defining feature, which basic RNAV lacks, is on-board performance monitoring and alerting. An ILS or VOR approach is not the comparison point.

14. A — If the runway environment is not in sight at the missed approach point, the crew must execute the missed approach. Descending below the MDA without references is prohibited.

15. B — At the decision altitude with the approach lights in sight and the aircraft in a position to land, the crew continues the approach and lands. The DA is a go/no-go point.

16. D — In a loss of pressurization, the immediate first action is to don oxygen masks and establish crew communication, because the time of useful consciousness may be only seconds. Troubleshooting and ATC calls follow.

17. C — When a rapid decompression may have caused structural damage, the crew reduces speed during the emergency descent to avoid aggravating the damage. Normally the descent is flown at maximum appropriate speed.

18. B — During the windshear escape the crew must NOT change configuration (gear or flaps); they apply maximum thrust, follow the flight-director/stick-shaker pitch, and maintain wings level. Configuration changes during the escape are hazardous.

19. C — After continuing an engine-fire takeoff past V1 and completing the memory items, the crew plans to land as soon as possible at a suitable airport. Fire is a land-immediately emergency.

20. A — The engine-fire memory items include closing the thrust lever, cutting off fuel and the engine via the fire handle, and discharging the fire extinguisher into that engine. A second bottle follows if the warning persists.

21. D — High-altitude stall recovery prioritizes reducing the angle of attack and accepting altitude loss, because thin air provides little excess thrust. Pulling or relying on thrust can deepen the stall.

22. D — After the initial airspeed gain and balloon, a microburst delivers a sinking downdraft and a performance-decreasing tailwind, leaving the aircraft low and slow. Reducing power in response to the initial gain is dangerous.

23. C — Encountering volcanic ash calls for immediately reducing thrust and exiting the cloud, typically with a 180° turn. Ash melts in the engine hot section and is radar-invisible, so climbing through or using radar is wrong.

24. B — Mach number is TAS ÷ local speed of sound: 470 ÷ 587 ≈ 0.80. This places the aircraft in the high subsonic cruise range.

25. D — Maximum landing weight is limited by the structural loads the gear and airframe absorb at the certified touchdown descent rate, which is why it is normally lower than MTOW.

26. A — L/D MAX, the speed of minimum total drag, governs maximum range, best glide, and best engine-out driftdown performance. The same efficiency speed serves all three.

27. B — The second segment, the most critical, requires a minimum gradient of 2.4 percent for a two-engine transport. It is flown at V2 with takeoff flaps and frequently limits takeoff weight.

28. A — Domestic Part 121 fuel must reach the destination, then the most distant alternate, then provide 45 minutes at normal cruise. The reserve is added after the alternate.

29. C — A Part 121 PIC must hold an ATP certificate and a first-class medical certificate. The first-class medical is required for air carrier PIC duty.

30. B — Above 14,000 feet, the standard holding inbound leg is 1.5 minutes (1 minute at or below 14,000 feet), adjusted for wind. The longer leg accommodates higher true airspeeds.

31. D — High density altitude (hot, high field) reduces both engine thrust and aerodynamic performance because the air is less dense. This degrades takeoff performance.

32. A — RVSM provides 1,000-foot vertical separation between FL290 and FL410, nearly doubling usable altitudes. It requires approved altitude-keeping equipment and operator authorization.

33. C — Pitot tubes and static ports are electrically heated to keep flight data accurate. Unheated pitot-static sensors can produce dangerously erroneous airspeed and altitude indications.

34. A — A qualifying graduate of an approved four-year aviation degree program may be issued the R-ATP at 1,000 hours. The two-year threshold is 1,250 hours and military is 750 hours.

35. B — Cabin pressure is regulated mainly by the outflow valve, which meters air leaving the cabin; inflow from the packs is relatively constant. Closing the valve raises pressure, opening it lowers it.

36. D — Tower-reported surface winds are referenced to magnetic north, whereas winds aloft forecasts use true north. Recognizing which reference applies prevents heading errors.

37. C — Using 2°C per 1,000 feet from +15°C: 15 − (2 × 32) = 15 − 64 = −49°C at 32,000 feet. The standard lapse rate gives a straightforward linear estimate.

38. C — DC power is produced from AC through Transformer Rectifier Units (TRUs). Static inverters do the reverse (DC to AC) for essential AC loads.

39. D — Mach buffet results from airflow separating behind the shock wave that forms past critical Mach, with the turbulent flow striking the tail. It is the high-speed counterpart to low-speed stall buffet.

40. A — A non-convective SIGMET advises all aircraft of severe icing, severe or extreme turbulence, clear air turbulence, dust/sand storms, and volcanic ash. AIRMETs cover the moderate end.

41. A — In domestic Part 121 operations, operational control is shared jointly between the PIC and the dispatcher; both must agree to the release and either can stop or divert the flight.

42. B — A swept wing stalls at the tips first; because the tips are located aft of the center of gravity, losing lift there shifts the center of lift forward and pitches the nose up. Wing fences mitigate this.

43. B — Standard alternate minimums for a non-precision approach are an 800-foot ceiling and 2 statute miles visibility (600-2 for precision). These differ from the destination 1-2-3 trigger.

44. C — PIC currency for carrying passengers requires three takeoffs and landings within the preceding 90 days in the same category and class. The six-approach rule is instrument currency, a separate requirement.

45. D — By definition, jet stream core winds are 50 knots or greater, frequently exceeding 100. Jet streams form along sharp temperature boundaries near the tropopause.

46. B — The correct response to an automation surprise is to disconnect it and hand-fly while diagnosing the problem. Automation does what it is told, not always what the crew intended.

47. D — Wing and engine anti-ice on most jets uses hot bleed air ducted through the leading edges and inlets — a thermal system. Windshields and probes use electrical heat instead.

48. C — A cold front produces a narrow band of intense, showery weather that clears quickly, with cumuliform clouds and gusty winds. Warm fronts produce the wide stratiform decks and steady rain.

49. A — A climbing jet's Mach number increases at constant true airspeed because the speed of sound decreases with falling temperature. A jet can approach its Mach limit just by climbing.

50. A — Task saturation or fixation is the dangerous failure mode where a crew becomes so absorbed in one problem that they neglect to fly the aircraft. It has caused controlled-flight-into-terrain accidents.

51. C — The ATP aeronautical knowledge requirements are contained in 14 CFR §61.155, with the multiengine training prerequisite in §61.156. Parts 91/121/135 govern operations.

52. D — The dispatch release must specify the alternate(s) and the minimum fuel for the flight, along with route, weather, and restrictions. It does not record cabin-crew names or load factor.

53. B — Under the 60 percent dry-runway factor, the required runway length is the actual landing distance ÷ 0.6: 3,300 ÷ 0.6 = 5,500 feet. The factor builds a buffer into dispatch.

54. A — Below L/D MAX, induced drag dominates and rises as airspeed decreases and angle of attack increases. This is the back side of the drag curve.

55. C — Reduced-thrust takeoffs are prohibited on contaminated runways (snow, slush, standing water) because the reduced performance margin is unacceptable when braking and acceleration are degraded.

56. D — The FMS blends navigation sensors such as GPS and inertial reference (and radio aids) to determine position. It does not rely on a single station or the standby instruments.

57. B — A low-pressure system has rising, converging air that cools and condenses moisture, producing clouds and precipitation. In the Northern Hemisphere it circulates counterclockwise and inward.

58. A — On a swept wing, the chordwise component of airflow (perpendicular to the leading edge) is responsible for triggering compressibility effects; the spanwise component does not. This is why sweep delays compressibility.

59. B — A Part 121 PIC must hold a first-class medical certificate (and an ATP certificate). The first-class medical is required for air carrier PIC duty.

60. D — Carbon monoxide poisoning produces hypemic hypoxia, in which the blood cannot carry oxygen. It is distinct from hypoxic, stagnant, and histotoxic hypoxia.

61. C — Part 117 requires a minimum 10-hour rest period before a flight duty period, including an opportunity for at least 8 uninterrupted hours of sleep. This replaced the older Part 121 limits.

62. A — A single hydraulic system loss leaves controllability via the remaining independent systems, with degraded functions managed by the appropriate checklist. Redundancy is precisely why one loss is not catastrophic.

63. C — Percent MAC = (CG arm − LEMAC) ÷ MAC × 100 = (922 − 900) ÷ 100 × 100 = 22 percent MAC. This converts a CG station into a percentage of the mean aerodynamic chord.

64. D — The yaw damper suppresses the Dutch roll oscillation, a coupled roll-yaw motion that wing sweep aggravates. An inoperative yaw damper often restricts altitude.

65. B — Under the 1-2-3 rule, no alternate is required if, within ±1 hour of the ETA, the ceiling is at least 2,000 feet and visibility at least 3 statute miles. Both thresholds must be met.

66. D — Sweep raises the critical Mach number by reducing the effective airflow velocity the wing experiences, so local flow reaches Mach 1.0 at a higher actual aircraft Mach number. This is the high-speed benefit of sweep.

67. C — The dispatcher, sharing operational control from the ground, may amend or cancel the dispatch release and prevent or divert the flight. The dispatcher cannot physically fly the aircraft or override ATC.

68. A — The only reliable defense against spatial disorientation is to trust and fly by reference to the flight instruments, since the vestibular senses produce false cues without visual references. "Flying by feel" worsens it.

69. B — AIRMET Zulu specifically addresses moderate icing and freezing levels. Sierra covers IFR/obscuration and Tango covers turbulence and surface winds.

70. A — In the lift equation, velocity enters as a square, so doubling speed quadruples available lift — and also quadruples parasite drag. This makes speed the dominant variable.

71. D — A Restricted ATP holder may serve only as second-in-command (first officer) until reaching 1,500 total hours. It does not permit Part 121 PIC duty or examiner/dispatcher roles.

72. B — The electrical system sheds non-essential loads when generating capacity is lost in order to preserve power to the essential and battery buses that feed flight-critical systems. Shedding does not create more total power.

73. C — Wing fences and vortex generators control spanwise flow to reduce the swept wing's tendency to stall at the tips first. They do not raise critical Mach, eliminate flaps, or lower takeoff weight.

74. B — In domestic Part 121 operations, the dispatch release must be agreed to by both the pilot-in-command and the dispatcher, reflecting their jointly shared operational control. Either can prevent or divert the flight.

75. A — Radiation fog forms in calm conditions overnight as the ground cools, and it burns off with daytime heating. Advection fog, by contrast, requires wind and warm moist air over a cooler surface.

76. C — The chordwise component crosses the wing perpendicular to the leading edge, where the airflow accelerates to local Mach 1.0, triggering compressibility. The spanwise flow does not.

77. D — An applicant for an unrestricted ATP certificate must be at least 23 years old (21 for a restricted ATP). This age requirement is a frequently tested recall item.

78. D — Passenger oxygen masks typically deploy automatically at about 14,000 feet cabin altitude. The cabin-altitude warning to the crew activates earlier, around 10,000 feet.

79. C — An aft (but legal) CG reduces tail download and trim drag, slightly improving cruise fuel efficiency. The trade-off is reduced longitudinal stability.

80. B — A clearway extends the takeoff distance available (TODA); a stopway extends the accelerate-stop distance available (ASDA). Knowing which surface extends which distance is a tested distinction.

81. C — Stable air resists vertical motion, producing stratiform clouds, smooth air, and poor visibility from trapped haze and fog. Unstable air produces the cumuliform clouds and turbulence of the other options.

82. A — A qualifying military pilot may be issued a Restricted ATP at 750 hours. The four-year aviation degree threshold is 1,000 hours and the two-year is 1,250 hours.

83. B — Bleed air is a shared resource used for pressurization, anti-ice, and engine starting. It does not drive the hydraulic engine-driven pumps, charge the battery, or power the displays.

84. A — V1 is the takeoff decision speed: the maximum speed at which a reject can still safely stop the aircraft within the available distance. At or after V1 the takeoff must be continued.

85. D — The Graphical Forecasts for Aviation (GFA) is the primary interactive graphical briefing tool for the continental U.S., presenting observations and forecasts across time and altitude. It has largely replaced older static products.

86. D — VR, the rotation speed, is always equal to or greater than V1, ensuring rotation does not begin before the decision speed. Rotating too early risks a tail strike or liftoff below a safe speed.

87. C — A Convective SIGMET automatically implies severe turbulence, severe icing, and low-level wind shear, so those are not issued separately. It is valid for 2 hours over the contiguous U.S.

88. A — At high cruise altitude on one engine, the available thrust is insufficient to sustain level flight, requiring a driftdown to a lower sustainable altitude. This is the basis of engine-out cruise planning.

89. B — Risk is assessed by combining the likelihood and the severity of a hazard. Pairing the wrong two factors (time/cost, convenience/effort, distance/fuel) is a common distractor.

90. B — A winds aloft coded group of 9900 means the wind is light and variable, defined as less than 5 knots. It is not a numerical direction or speed.

91. C — An operator's MEL may be more restrictive than the manufacturer's Master MEL, but never less. An item not addressed or required to be operative makes the aircraft un-dispatchable.

92. D — Fuel weight equals gallons × density: 4,500 × 6.7 = 30,150 pounds. Converting volume to weight is essential for accurate weight-and-balance and performance planning.

93. B — Stagnant hypoxia results from impaired blood circulation, such as blood pooling under G-forces. It is distinct from hypoxic, hypemic, and histotoxic hypoxia.

94. A — As density falls with altitude, the wing must fly at a higher true airspeed for a given indicated airspeed to maintain lift. This is why a jet's TAS far exceeds its indicated airspeed at altitude.

95. C — Instrument currency (the "6-HIT") requires, within the preceding 6 calendar months, six approaches, holding, and intercepting and tracking courses using navigation systems. It need not be in actual conditions.

96. D — Clear (glaze) ice from large supercooled droplets and freezing rain is the most dangerous structural icing — heavy, hard, smooth, and tenacious. Rime, frost, and a trace of mixed ice are less dangerous.

97. A — A STAR transitions an aircraft from the en route structure to the approach environment, often with published crossing altitudes and speeds. A SID does the reverse after takeoff.

98. C — The first takeoff climb segment extends from liftoff (35 feet) until the landing gear is fully retracted, flown at takeoff thrust with takeoff flaps. Its minimum gradient for a twin is positive.

99. B — A cabin-altitude warning typically activates at about 10,000 feet cabin altitude, alerting the crew before hypoxia becomes severe. Masks deploy later, around 14,000 feet.

100. A — The limiting structural parameter for pressurization is the maximum differential pressure between cabin and outside, since the structure can only withstand so much pressure difference. Pressurization is scheduled never to exceed it.

101. C — The second-segment climb gradient is most often the limiting factor for the maximum takeoff weight, because it is the most demanding engine-out segment. It is not the least restrictive or flaps-up segment.

102. D — The flight may not depart without a valid release agreed to by both the captain and the dispatcher, reflecting their jointly shared operational control. ATC clearance and the chief pilot's signature are not the requirement.

103. D — High-altitude stall recovery prioritizes reducing the angle of attack and accepting altitude loss, because thin air provides little excess thrust to power out. Pulling or relying on thrust can deepen the stall.

104. A — Clear air turbulence is most severe on the cold (polar) side of the jet stream, near the core, where wind shear is greatest. It is also associated with the tropopause and mountain waves.

105. B — Static inverters convert battery DC to AC for essential AC instruments in an emergency. The reverse (AC to DC) is done by Transformer Rectifier Units.

106. B — As fuel burns off and the aircraft lightens, the optimum altitude rises, so long flights step to higher altitudes — the step climb — to stay near the most efficient profile. Driftdown is an engine-out descent.

107. D — A Decision Altitude is used on approaches providing vertical guidance, such as an ILS or LPV; the pilot decides to land or go around at the DA. Non-precision approaches use an MDA.

108. A — At L/D MAX, total drag is at its minimum and the lift-to-drag ratio is greatest, producing the most efficient cruise. Parasite drag is not zero and induced drag is not at maximum there.

109. C — The ATP certificate is governed by 14 CFR Part 61, with knowledge requirements in §61.155. Parts 91/121/135 govern operations, not the certificate itself.

110. C — A direction digit of 78 signals winds over 100 knots: subtract 50 (78 − 50 = 280°) and add 100 to the speed (48 + 100 = 148). "7848" decodes to 280° at 148 knots.

111. B — A temperature inversion is a layer where temperature increases with altitude, the reverse of normal, producing very stable air that traps moisture and pollutants and reduces visibility.

112. D — The ram air turbine deploys into the airstream to provide emergency hydraulic and/or electrical power when normal sources fail. It is a last-resort backup, not a normal-operations source.

113. A — The moist adiabatic lapse rate is lower than the dry rate because condensation in saturated rising air releases latent heat that partly offsets the cooling. This is why saturated parcels cool more slowly.

114. B — A stopway extends the accelerate-stop distance available (ASDA); a clearway extends the takeoff distance available (TODA). Knowing which surface extends which distance is a tested distinction.

115. A — Closed-loop communication means the receiver confirms the message so the sender knows it was understood — the same principle as an ATC readback. It prevents miscommunication.

116. D — On most high-bypass turbofans, fan/low-pressure spool speed (N1) is the primary thrust-setting parameter (EPR on some engine types). EGT is the limiting parameter, not the setting parameter.

117. B — When an explosive decompression may have caused structural damage, the crew reduces speed during the emergency descent to avoid aggravating the damage. Normally the descent is flown at maximum appropriate speed.

118. C — Maximum continuous thrust is the highest thrust permitted for unlimited duration and is the relevant ceiling during engine-out climb. Takeoff thrust, by contrast, is time-limited.

119. C — Hail and severe turbulence can be encountered in clear air beneath and beside a thunderstorm, not just inside it — hail can be thrown miles under the anvil. This is why wide avoidance is required.

120. A — The DECIDE model ends in Evaluate — assessing the effect of the action taken, which makes it a continuous loop. The steps are Detect, Estimate, Choose, Identify, Do, Evaluate.

121. D — CG shift equals (weight moved × distance moved) ÷ total weight: (7,500 × 160) ÷ 150,000 = 8 inches. The CG moves toward the direction of the shift.

122. C — Mach tuck is a nose-down pitch from the rearward shift of the center of lift as a shock wave forms. It is distinct from Dutch roll, Mach buffet, and high-Mach roll-off.

123. D — The antidote to the macho attitude ("I can do it") is "taking chances is foolish." Recognizing the attitude is the first step before applying the antidote.

124. B — No wind or temperature is forecast for a winds aloft level within 1,500 feet of the station elevation. Temperatures are also omitted for levels within 2,500 feet of the station.

125. A — Typical cruise cabin altitude on a transport at high cruise is maintained around 6,000 to 8,000 feet, far below the actual flight altitude, to keep occupants comfortable and safe.