PRACTICE EXAM 13 (60 QS)

1. Which feature defines a "high-performance" airplane, as opposed to a "complex" airplane?

A. An engine of more than 200 horsepower

B. Retractable gear, flaps, and a controllable-pitch propeller

C. A pressurized cabin certified above 25,000 feet

2. A "complex" airplane is distinguished from a high-performance airplane by having:

A. An engine exceeding 200 horsepower

B. A turbocharged engine

C. Retractable gear, flaps, and a controllable-pitch propeller

3. Which climb speed produces the greatest altitude gain over the shortest horizontal distance?

A. Best rate of climb (V_Y)

B. Best angle of climb (V_X)

C. Maneuvering speed (V_A)

4. Which climb speed produces the greatest altitude gain in the least time?

A. Best angle of climb (V_X)

B. Best glide speed (V_G)

C. Best rate of climb (V_Y)

5. Detonation differs from pre-ignition in that detonation is:

A. The mixture igniting too early from a hot spot

B. The uncontrolled, near-explosive burning of the mixture

C. A normal part of the combustion cycle

6. Pre-ignition is best described as:

A. The smooth, controlled burning of the mixture

B. The mixture igniting before the spark plug fires, often from a hot spot

C. A loss of all ignition during cruise

7. With the inclinometer ball to the inside of a turn, the aircraft is in a:

A. Slip

B. Skid

C. Coordinated turn

8. With the inclinometer ball to the outside of a turn, the aircraft is in a:

A. Slip

B. Skid

C. Coordinated turn

9. An anti-ice system is designed to:

A. Remove ice after it has accumulated

B. Melt ice only after landing

C. Prevent ice from forming

10. A de-ice system, such as pneumatic boots, is designed to:

A. Prevent any ice from forming

B. Heat the windshield continuously

C. Remove ice after it has accumulated

11. For the purpose of displaying position lights, "night" is defined as:

A. The end of evening civil twilight to the beginning of morning civil twilight

B. Sunset to sunrise

C. One hour after sunset to one hour before sunrise

12. For the purpose of logging night flight time, "night" is defined as:

A. Sunset to sunrise

B. The end of evening civil twilight to the beginning of morning civil twilight

C. One hour after sunset to one hour before sunrise

13. For the purpose of meeting night passenger-carrying currency, the required experience must be obtained:

A. From one hour after sunset to one hour before sunrise

B. From sunset to sunrise

C. During evening civil twilight only

14. An AIRMET differs from a SIGMET in that an AIRMET warns of weather hazardous to:

A. Light aircraft

B. All aircraft, including airliners

C. Ground operations only

15. A SIGMET warns of weather hazardous to:

A. Light aircraft only

B. VFR pilots only

C. All aircraft

16. Entry into Class B airspace requires:

A. A specific clearance to enter

B. Only two-way radio communication established

C. Squawking 1200 and remaining clear of clouds

17. Entry into Class C or D airspace requires:

A. A specific clearance worded "cleared to enter"

B. Two-way radio communication established with ATC

C. An IFR flight plan in all cases

18. A blocked pitot tube (ram and drain) causes the airspeed indicator to:

A. Drop immediately to zero

B. Behave like an altimeter, rising in a climb

C. Read correctly with no error

19. A blocked static port causes the altimeter to:

A. Freeze at the reading where the blockage occurred

B. Continuously increase regardless of altitude

C. Drop immediately to zero

20. "Currency" differs from "proficiency" in that currency refers to:

A. Genuine, demonstrated piloting skill

B. The aircraft's inspection status

C. Meeting the legal minimum recency requirements

21. "Proficiency" is best described as:

A. Meeting the legal recency minimums

B. The aircraft's maintenance condition

C. Genuine, safe piloting competence

22. When converting a true course to magnetic, the pilot accounts for variation, which is the difference between:

A. True north and magnetic north

B. The aircraft's heading and its course

C. Indicated and true airspeed

23. Deviation, applied when converting magnetic heading to compass heading, is caused by:

A. The difference between true and magnetic north

B. The aircraft's own magnetic fields from metal and electronics

C. Crosswind drift during flight

24. Stable air is most associated with:

A. Cumuliform clouds and showery precipitation

B. Severe turbulence and good visibility

C. Stratiform clouds, steady precipitation, and poor visibility

25. Unstable air is most associated with:

A. Layered clouds and smooth flight

B. Steady drizzle and haze

C. Cumuliform clouds, showers, and turbulence

26. A warm front typically brings:

A. A narrow band of violent weather with rapid clearing

B. Widespread layered clouds, steady rain, and low ceilings

C. Gusty winds and towering cumulus

27. A cold front typically brings:

A. Prolonged drizzle over a wide area

B. A narrow band of intense weather and rapid clearing behind

C. No significant weather change

28. Radiation fog forms under conditions of:

A. Clear skies, calm wind, and a small temperature/dew-point spread

B. Strong wind over a cold surface

C. Warm air moving over a much warmer ocean

29. Advection fog requires:

A. Calm, clear conditions at night

B. Wind moving warm, moist air over a cooler surface

C. Rapidly rising air over mountains

30. Clear ice, the most hazardous icing type, forms from:

A. Dry snow on a cold wing

B. Small droplets freezing instantly on contact

C. Large supercooled droplets that flow back before freezing

31. Rime ice forms from:

A. Large supercooled droplets flowing back over the surface

B. Rain falling through warm air

C. Small droplets freezing instantly on contact

32. A transponder code of 7500 indicates:

A. A hijacking

B. A radio failure

C. A general emergency

33. A transponder code of 7700 indicates:

A. A hijacking

B. A radio failure

C. A general emergency

34. A steady red light gun signal to an aircraft in flight means:

A. Cleared to land

B. Give way to other aircraft and continue circling

C. Return for landing

35. A flashing red light gun signal to an aircraft in flight means:

A. Cleared to land

B. Return for landing

C. Airport unsafe, do not land

36. The attitude indicator and heading indicator are typically powered by the:

A. Electrical system

B. Pitot-static system

C. Vacuum system

37. The turn coordinator is typically powered by the:

A. Vacuum system

B. Electrical system

C. Pitot-static system

38. A forward CG, compared to an aft CG, makes an airplane:

A. Less stable with lighter controls

B. More stable with a higher stall speed

C. Prone to uncontrollable spins

39. An aft CG, compared to a forward CG, makes an airplane:

A. Less stable and harder to recover from a stall

B. More stable with heavier controls

C. Higher in stall speed and landing speed

40. Parasite drag, unlike induced drag, is greatest at:

A. Low airspeed and high angle of attack

B. High airspeed

C. The stall

41. Induced drag, unlike parasite drag, is greatest at:

A. High airspeed in cruise

B. The never-exceed speed

C. Low airspeed and high angle of attack

42. A VOR radial is always measured:

A. Toward the station

B. Relative to the aircraft's heading

C. From the station

43. The CDI on a VOR is independent of the aircraft's:

A. Position relative to the radial

B. Heading

C. Selected course

44. Day passenger-carrying recency landings, unlike night, may be:

A. Touch-and-go landings

B. Full-stop landings only

C. Made at a towered airport only

45. Night passenger-carrying recency landings, unlike day, must be:

A. To a full stop

B. Touch-and-go only

C. At an uncontrolled field

46. An annual inspection, unlike a 100-hour inspection, is required:

A. Only for aircraft operated for hire

B. Only every 100 hours of operation

C. For all aircraft every 12 calendar months

47. A 100-hour inspection, unlike an annual, is required:

A. For all aircraft regardless of use

B. Only when operated for hire or instruction for hire

C. Every 24 calendar months

48. "Pressure altitude" is the altitude shown when the altimeter is set to:

A. 29.92 in. Hg

B. The local altimeter setting

C. The field elevation

49. "Density altitude" is best described as:

A. The altitude shown with the local setting

B. Height above the terrain

C. Pressure altitude corrected for nonstandard temperature

50. Maneuvering speed (V_A), unlike V_NE, changes with weight, specifically:

A. Decreasing as weight decreases

B. Increasing as weight decreases

C. Remaining fixed at all weights

51. The white arc on the airspeed indicator, unlike the green arc, represents the:

A. Flap operating range

B. Normal operating range

C. Caution range

52. The yellow arc on the airspeed indicator represents the:

A. Normal operating range

B. Caution range, smooth air only

C. Flap operating range

53. Hypoxic hypoxia, unlike hypemic hypoxia, is caused by:

A. Insufficient oxygen pressure at altitude

B. The blood's reduced oxygen-carrying capacity

C. Cells unable to use available oxygen

54. Hyperventilation, unlike hypoxia, is corrected by:

A. Consciously slowing the breathing rate

B. Climbing to a higher altitude

C. Breathing more rapidly

55. A Prohibited Area, unlike a Restricted Area, is:

A. Enterable with controlling-agency permission

B. Marked only on IFR charts

C. Never permitted for flight under any condition

56. A Restricted Area, unlike a Prohibited Area, may be entered:

A. With permission from the controlling agency when active

B. Only at night

C. By squawking the emergency code

57. A "TO" indication on a VOR with a centered needle means the selected course leads:

A. Away from the station

B. Toward the station

C. Perpendicular to the radial

58. Best glide speed (V_G), unlike best rate of climb (V_Y), provides the:

A. Maximum gliding distance for altitude lost

B. Quickest altitude gain over time

C. Steepest climb for obstacle clearance

59. A magneto check showing NO RPM drop, unlike an excessive drop, most likely indicates:

A. A grounding problem with the magneto

B. A fouled spark plug

C. A faulty fuel injector

60. Wake turbulence, unlike normal propeller wash, is most severe when the generating aircraft is:

A. Light, fast, and dirty

B. On the ground at idle

C. Heavy, clean, and slow

Answer Key

1. A — A high-performance airplane is defined by its engine of more than 200 horsepower. A complex airplane, by contrast, is defined by its airframe features, not horsepower.

2. C — A complex airplane is distinguished by having retractable gear, flaps, and a controllable-pitch propeller. Horsepower defines a high-performance airplane, not a complex one.

3. B — Best angle of climb (V_X) produces the greatest altitude gain over the shortest horizontal distance, used for obstacle clearance. It is slower than V_Y and produces a steeper climb path.

4. C — Best rate of climb (V_Y) produces the greatest altitude gain in the least time. It is faster than V_X and is used when no obstacle is a concern.

5. B — Detonation is the uncontrolled, near-explosive burning of the fuel-air mixture, often from low-grade fuel or an excessively lean mixture. Pre-ignition, by contrast, is the mixture igniting too early.

6. B — Pre-ignition is the mixture igniting before the spark plug fires, usually from a hot spot such as a glowing deposit. It differs from detonation, which is uncontrolled explosive burning after ignition.

7. A — With the inclinometer ball to the inside of a turn, the aircraft is in a slip, meaning insufficient rate of turn for the bank. The correction is to add rudder toward the ball.

8. B — With the ball to the outside of a turn, the aircraft is in a skid, meaning too much rate of turn for the bank. A skidding turn near the stall is especially dangerous because it can precipitate a spin.

9. C — An anti-ice system prevents ice from forming, such as a heated pitot tube or windshield. A de-ice system, by contrast, removes ice after it has formed.

10. C — A de-ice system, such as pneumatic boots, removes ice after it has accumulated by breaking it off the leading edges. Anti-ice systems instead prevent ice from forming in the first place.

11. B — For displaying position lights, "night" is defined as the period from sunset to sunrise. This differs from the civil-twilight definition used for logging night time.

12. B — For logging night flight time, "night" is the period from the end of evening civil twilight to the beginning of morning civil twilight. This is distinct from the sunset-to-sunrise window for position lights.

13. A — Night passenger-carrying currency must be obtained during the period from one hour after sunset to one hour before sunrise. This is the specific window the regulation defines for night passenger experience.

14. A — An AIRMET warns of weather hazardous to light aircraft, such as moderate icing or turbulence. A SIGMET, by contrast, warns all aircraft of more severe conditions.

15. C — A SIGMET warns of weather hazardous to all aircraft, including airliners, such as severe turbulence or icing. An AIRMET concerns hazards to light aircraft.

16. A — Entry into Class B airspace requires a specific clearance to enter, such as "cleared into Bravo." Merely establishing communication, which suffices for Class C and D, is not enough.

17. B — Entry into Class C or D airspace requires two-way radio communication established with ATC, meaning the controller responds using the aircraft's call sign. No explicit clearance phrase is required as in Class B.

18. B — A blocked pitot tube (ram and drain) makes the airspeed indicator behave like an altimeter, rising in a climb and falling in a descent. The trapped pressure responds to ambient changes rather than airspeed.

19. A — A blocked static port causes the altimeter to freeze at the reading where the blockage occurred. The remedy is to select the alternate static source.

20. C — Currency refers to meeting the legal minimum recency requirements to exercise a privilege. Proficiency, by contrast, is genuine, demonstrated piloting skill.

21. C — Proficiency is genuine, safe piloting competence, which may exceed the legal recency minimums. A pilot can be legally current yet not proficient, and the regulations expect pilots to honor that difference.

22. A — Variation is the difference between true north and magnetic north, shown on charts by isogonic lines. It is applied when converting a true course to a magnetic course.

23. B — Deviation is caused by the aircraft's own magnetic fields from metal and electronics, and it is read from the compass correction card. It is applied when converting magnetic heading to compass heading.

24. C — Stable air is associated with stratiform clouds, steady precipitation, and poor visibility. It resists vertical motion, producing smooth, layered conditions.

25. C — Unstable air is associated with cumuliform clouds, showers, and turbulence, usually with good visibility between showers. It encourages vertical motion, producing puffy, vertically developed clouds.

26. B — A warm front brings widespread layered clouds, steady rain, and low ceilings over a large area for an extended time. Its slow movement spreads poor conditions broadly.

27. B — A cold front brings a narrow band of intense weather with rapid clearing behind it. Its fast movement and steep lifting produce brief but violent weather.

28. A — Radiation fog forms under clear skies, calm wind, and a small temperature/dew-point spread, as the ground cools at night. It commonly forms in low-lying areas and burns off after sunrise.

29. B — Advection fog requires wind moving warm, moist air over a cooler surface, often along coastlines. Unlike radiation fog, it needs wind to develop.

30. C — Clear ice forms from large supercooled droplets that flow back over the surface before freezing, creating a hard, heavy, glossy coating. It is the most hazardous icing type and the hardest to remove.

31. C — Rime ice forms from small droplets that freeze instantly on contact, creating a rough, milky, brittle deposit. It differs from clear ice, which comes from large droplets that flow back before freezing.

32. A — A transponder code of 7500 indicates a hijacking—"seven-five, taken alive." The other emergency codes are 7600 for lost comms and 7700 for a general emergency.

33. C — A transponder code of 7700 indicates a general emergency—"seven-seven, going to heaven." It unlocks ATC priority handling for the aircraft.

34. B — A steady red light gun signal to an aircraft in flight means give way to other aircraft and continue circling. The same steady red on the ground means stop.

35. C — A flashing red light gun signal to an aircraft in flight means the airport is unsafe—do not land. On the ground, it means taxi clear of the runway in use.

36. C — The attitude indicator and heading indicator are typically powered by the vacuum system. The turn coordinator, by contrast, is electrically powered.

37. B — The turn coordinator is typically powered by the electrical system, which is why it survives a vacuum failure. The attitude and heading indicators are vacuum-driven.

38. B — A forward CG makes an airplane more stable but raises the stall speed, because the tail must produce more downforce. It also increases approach and landing speeds.

39. A — An aft CG makes an airplane less stable and harder to recover from a stall, because the elevator may lack authority to lower the nose. This is what makes aft loading beyond limits especially dangerous.

40. B — Parasite drag is greatest at high airspeed, rising with the square of velocity. Induced drag, by contrast, is greatest at low airspeed and high angle of attack.

41. C — Induced drag is greatest at low airspeed and high angle of attack, where the wingtip vortices are strongest. Parasite drag, by contrast, dominates at high airspeed.

42. C — A VOR radial is always measured from the station, with 360 radials radiating outward. The CDI shows displacement from the selected radial.

43. B — The CDI on a VOR is independent of the aircraft's heading, reflecting only its position relative to the selected radial. Turning the aircraft without changing position does not move the needle.

44. A — Day passenger-carrying recency landings may be touch-and-go, unlike night landings which must be full-stop. The day requirement is less stringent than the night requirement.

45. A — Night passenger-carrying recency landings must be made to a full stop, unlike day landings which may be touch-and-go. Full-stop landings ensure proficiency in the more demanding night environment.

46. C — An annual inspection is required for all aircraft every 12 calendar months, regardless of use. A 100-hour inspection, by contrast, applies only to aircraft operated for hire.

47. B — A 100-hour inspection is required only when an aircraft is operated for hire or for flight instruction for hire. A privately owned aircraft flown for personal use needs only the annual.

48. A — Pressure altitude is the altitude shown when the altimeter is set to the standard datum of 29.92 in. Hg. Correcting it for temperature yields density altitude.

49. C — Density altitude is pressure altitude corrected for nonstandard temperature, representing air density as an altitude. Aircraft performance corresponds to density altitude, not field elevation.

50. A — Maneuvering speed (V_A) decreases as weight decreases, because a lighter airplane reaches its limiting load factor at a lower speed. V_NE, by contrast, is a fixed structural limit.

51. A — The white arc represents the flap operating range, from V_S0 to V_FE. The green arc, by contrast, is the normal operating range.

52. B — The yellow arc represents the caution range, to be used only in smooth air. It lies between V_NO (top of the green arc) and V_NE (the red line).

53. A — Hypoxic hypoxia is caused by insufficient oxygen pressure at altitude. Hypemic hypoxia, by contrast, results from the blood's reduced oxygen-carrying capacity.

54. A — Hyperventilation is corrected by consciously slowing the breathing rate and breathing normally, restoring carbon dioxide balance. Hypoxia, by contrast, is corrected with oxygen and descent.

55. C — A Prohibited Area is never permitted for flight under any condition, for reasons of national security or welfare. A Restricted Area, by contrast, may be entered with permission when inactive or authorized.

56. A — A Restricted Area may be entered with permission from the controlling agency when active. A Prohibited Area, by contrast, never permits flight.

57. B — A "TO" indication with a centered needle means the selected course leads toward the station. A "FROM" indication, conversely, means the course leads away from the station.

58. A — Best glide speed (V_G) provides the maximum gliding distance for the altitude lost, corresponding to the best lift-to-drag ratio. Best rate of climb (V_Y), by contrast, gives the quickest altitude gain over time.

59. A — No RPM drop on a magneto check most likely indicates a grounding problem, meaning the magneto is not being switched off properly. An excessive drop, by contrast, suggests a fouled plug or faulty magneto.

60. C — Wake turbulence is most severe when the generating aircraft is heavy, clean, and slow, the configuration of a large jet on takeoff or approach. This combination generates the most intense wingtip vortices.