PRACTICE EXAM 12 (60 QS)

1. A private pilot may share the operating expenses of a flight with passengers provided the pilot pays:

A. None of the cost, since passengers cover it all

B. At least a pro rata share of the expenses

C. Exactly one-half regardless of the number aboard

2. A third-class medical issued to a pilot who was 45 at the date of examination is valid for:

A. 60 calendar months

B. 36 calendar months

C. 24 calendar months

3. A wing stalls when it exceeds its:

A. Maximum structural cruising speed

B. Critical angle of attack

C. Never-exceed speed

4. In a coordinated level turn at 60° of bank, the load factor is approximately:

A. 1.0 G

B. 2.0 G

C. 4.0 G

5. The first indication of carburetor ice in a fixed-pitch propeller airplane is usually:

A. A gradual loss of RPM

B. A rise in oil temperature

C. An increase in manifold pressure

6. A vacuum pump failure will most directly affect the:

A. Attitude indicator and heading indicator

B. Airspeed indicator and altimeter

C. Magnetic compass and tachometer

7. Setting the altimeter to 29.92 in. Hg makes it display:

A. True altitude above sea level

B. Pressure altitude

C. Height above the terrain

8. Around a low-pressure system in the Northern Hemisphere, air circulates:

A. Counterclockwise and inward, producing rising air

B. Clockwise and outward, producing sinking air

C. Straight inward with no rotation

9. A small temperature/dew-point spread indicates:

A. Strong, gusty surface winds

B. Likely fog or low cloud formation

C. Rapidly clearing skies

10. Structural icing requires visible moisture and:

A. A temperature at or below freezing

B. Clear skies with no precipitation

C. High humidity above freezing

11. A METAR is best described as:

A. A 24-hour forecast for an airport

B. A graphical pressure chart

C. An observation of current weather

12. AIRMET Zulu provides information about:

A. Turbulence and surface winds

B. IFR conditions and mountain obscuration

C. Icing and freezing levels

13. A runway holding position marking consists of:

A. Two solid and two dashed yellow lines

B. A single solid white line

C. Four dashed red lines

14. Entry into Class C airspace requires:

A. A specific clearance to enter

B. Two-way radio communication established with ATC

C. An IFR flight plan

15. The VFR visibility minimum in Class B airspace is:

A. 5 statute miles

B. 1 statute mile

C. 3 statute miles

16. A transponder code of 7600 indicates:

A. A radio communication failure

B. A hijacking

C. A general emergency

17. Traffic called by a controller using clock position is referenced to the aircraft's:

A. Ground track

B. Magnetic heading

C. Nose direction always

18. A VOR radial is a magnetic bearing measured:

A. Toward the station

B. From the station

C. Relative to the aircraft's heading

19. Converting a true heading to magnetic with westerly variation requires the pilot to:

A. Subtract the variation

B. Ignore the variation

C. Add the variation

20. Density altitude is best defined as:

A. Pressure altitude corrected for nonstandard temperature

B. The altitude shown with the local altimeter setting

C. Height above the nearest terrain

21. The best angle of climb speed (V_X) provides the most altitude gained per unit of:

A. Time

B. Fuel burned

C. Horizontal distance

22. The center of gravity is calculated by:

A. Multiplying total weight by the datum arm

B. Subtracting empty weight from gross weight

C. Dividing total moment by total weight

23. One of the first and most insidious symptoms of hypoxia is:

A. Sharp chest pain

B. Euphoria and impaired judgment

C. Immediate unconsciousness

24. At night, to see a dim object most effectively, a pilot should:

A. Stare directly at the object's center

B. Use off-center viewing

C. Scan rapidly across the object

25. The "IM SAFE" checklist is used to assess:

A. Aircraft airworthiness

B. Fuel and route planning

C. Personal fitness for flight

26. The minimum fuel reserve for a night VFR flight is the destination plus:

A. 30 minutes

B. 20 minutes

C. 45 minutes

27. Upon engine failure, the pilot's first action is to:

A. Transmit a MAYDAY immediately

B. Establish best glide speed

C. Engage the starter and add power

28. Aircraft position lights are:

A. White on both wingtips, red on the tail

B. Green on the left, red on the right

C. Red on the left, green on the right, white on the tail

29. A VFR flight plan's primary purpose is to provide:

A. Search-and-rescue protection

B. ATC separation from traffic

C. Authorization for Class B entry

30. A private pilot certificate generally does NOT permit:

A. Carrying passengers on a personal flight

B. Acting as PIC for compensation or hire

C. Sharing the pro rata cost of a flight

31. An annual inspection is required for all aircraft within the preceding:

A. 24 calendar months

B. 100 hours of operation

C. 12 calendar months

32. When two aircraft are converging at the same altitude, right-of-way belongs to the aircraft:

A. At the higher altitude

B. Traveling faster

C. To the other's right

33. Maneuvering speed (V_A) as the aircraft's weight decreases:

A. Increases

B. Decreases

C. Remains constant

34. Wake turbulence is most severe behind an aircraft that is:

A. Heavy, clean, and slow

B. Light, dirty, and fast

C. On the ground at idle

35. A cold front is characterized by:

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

B. Widespread layered clouds and prolonged drizzle

C. No significant weather change

36. The dew point is the temperature to which air must be:

A. Heated to evaporate all moisture

B. Cooled to become saturated

C. Compressed to release heat

37. A steady green light gun signal to an aircraft in flight means:

A. Return for landing

B. Cleared to land

C. Give way and continue circling

38. A balloon, glider, airship, and airplane converge. The aircraft with the lowest right-of-way priority (excluding distress) is the:

A. Balloon

B. Glider

C. Airplane

39. Supplemental oxygen must be used continuously by the required crew above:

A. 10,000 feet MSL

B. 12,500 feet MSL

C. 14,000 feet MSL

40. The color of 100LL aviation fuel is:

A. Blue

B. Green

C. Red

41. Spatial disorientation is best counteracted by:

A. Relying on inner-ear sensations

B. Trusting the flight instruments

C. Making rapid head movements

42. A magneto allows the engine to run during a complete electrical failure because it:

A. Generates its own electrical current independently

B. Draws current from the battery

C. Is powered by the alternator

43. The minimum age to be issued a private pilot certificate (airplane) is:

A. 15 years old

B. 17 years old

C. 14 years old

44. A flight review must be completed within the preceding:

A. 12 calendar months

B. 36 calendar months

C. 24 calendar months

45. A forward center of gravity makes an airplane:

A. More stable with a higher stall speed

B. Less stable with a lower stall speed

C. Unaffected in both stability and stall speed

46. A standard traffic pattern uses which direction of turns unless otherwise indicated?

A. Left turns

B. Right turns

C. Straight-in only

47. The mature stage of a thunderstorm is most hazardous because it contains:

A. Only gentle updrafts

B. No precipitation

C. Both updrafts and downdrafts with heavy precipitation

48. A VFR flight plan must be closed by:

A. The pilot

B. Air traffic control automatically

C. The destination airport manager

49. Induced drag is greatest at:

A. High airspeed and low angle of attack

B. Low airspeed and high angle of attack

C. Cruise airspeed only

50. The required documents aboard for a domestic flight do NOT include the:

A. Airworthiness certificate

B. Radio station license

C. Registration certificate

51. A pilot leans the mixture at altitude primarily to:

A. Restore the proper fuel-air ratio as air density decreases

B. Increase fuel flow for more power

C. Cool the engine by adding fuel

52. The minimum safe altitude over a congested area is 1,000 feet above the highest obstacle within a horizontal radius of:

A. 2,000 feet

B. 1,000 feet

C. 500 feet

53. A pilot must realign the heading indicator with the magnetic compass during:

A. A standard-rate turn

B. Acceleration on takeoff

C. Straight-and-level, unaccelerated flight

54. A temperature inversion typically produces:

A. Strong convective turbulence

B. Rapid clearing and unlimited visibility

C. Smooth, stable air with restricted visibility

55. Lift increases with the square of which variable?

A. Airspeed

B. Aircraft weight

C. Air temperature

56. A "hot" Restricted Area may be entered only:

A. By squawking 1200

B. At night when activity ceases

C. With permission from the controlling agency

57. The hazardous attitude of macho ("I can do it") is countered by the antidote:

A. "Follow the rules"

B. "Taking chances is foolish"

C. "I'm not helpless"

58. An ELT transmits on which frequencies for search and rescue?

A. 122.8 MHz and 123.0 MHz

B. 121.5 MHz and 406 MHz

C. 118.0 MHz and 136.0 MHz

59. The standard temperature lapse rate is approximately:

A. 5°C per 1,000 feet

B. 3.5°C per 1,000 feet

C. 2°C per 1,000 feet

60. Stall speed increases with all of the following EXCEPT:

A. A decrease in load factor

B. An increase in aircraft weight

C. Wing contamination by ice

Answer Key

1. B — A private pilot may share operating expenses with passengers only if the pilot pays at least a pro rata share. Paying less would amount to flying for compensation, which private privileges prohibit.

2. C — Because the pilot was age 40 or older at the date of examination, the third-class medical is valid for 24 calendar months. Pilots under 40 at the exam receive 60 months.

3. B — A wing stalls when it exceeds its critical angle of attack, at which airflow separates from the upper surface. This can occur at any airspeed or attitude.

4. B — In a coordinated level turn at 60° of bank, the load factor is approximately 2.0 G. Load factor rises sharply beyond 60°, reaching nearly 4 G at 75°.

5. A — The first indication of carburetor ice in a fixed-pitch propeller airplane is a gradual loss of RPM. A constant-speed propeller would instead show a loss of manifold pressure.

6. A — A vacuum pump failure most directly affects the vacuum-driven attitude indicator and heading indicator. The electric turn coordinator remains available as a backup.

7. B — Setting the altimeter to the standard datum of 29.92 in. Hg makes it display pressure altitude. Correcting that for temperature yields density altitude.

8. A — Around a Northern Hemisphere low, air circulates counterclockwise and inward, producing rising air that forms clouds and precipitation. A high circulates clockwise and outward with sinking air.

9. B — A small temperature/dew-point spread means the air is near saturation, indicating likely fog or low cloud formation. As the spread narrows toward zero, visible moisture becomes likely.

10. A — Structural icing requires both visible moisture and a temperature at or below freezing. Without both conditions present, ice will not accumulate on the airframe.

11. C — A METAR is an observation of current weather conditions, normally issued hourly. A forecast of expected conditions is provided by a TAF instead.

12. C — AIRMET Zulu provides information about icing and freezing levels. Sierra covers IFR and mountain obscuration, and Tango covers turbulence.

13. A — A runway holding position marking consists of two solid and two dashed yellow lines, and the pilot holds short on the solid-line side. It is the primary safeguard against runway incursions.

14. B — Entry into Class C airspace requires two-way radio communication established with ATC, meaning the controller responds using the aircraft's call sign. Class B, by contrast, requires an explicit clearance.

15. C — The VFR visibility minimum in Class B airspace is 3 statute miles, with the requirement to remain clear of clouds. ATC provides separation, making the cloud-clearance requirement the simplest.

16. A — A transponder code of 7600 indicates a radio communication failure—"seven-six, radio nix." The other emergency codes are 7500 for hijacking and 7700 for a general emergency.

17. A — Traffic called by clock position is referenced to the aircraft's ground track, not its heading. In a crosswind, the nose direction and ground track can differ.

18. B — A VOR radial is a magnetic bearing measured from the station, with 360 radials radiating outward. The CDI shows displacement from the selected radial.

19. C — Converting a true heading to magnetic with westerly variation requires adding the variation, per "west is best." Easterly variation, by contrast, is subtracted.

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

21. C — The best angle of climb speed (V_X) provides the most altitude gained per unit of horizontal distance, used for obstacle clearance. Best rate (V_Y) gives the most altitude per unit of time.

22. C — The center of gravity is calculated by dividing total moment by total weight. Each item's moment is its weight multiplied by its arm from the datum.

23. B — One of the first and most insidious symptoms of hypoxia is euphoria and impaired judgment, which mask the danger. The victim often feels fine and fails to recognize the need for oxygen.

24. B — At night, off-center viewing—looking slightly to the side of an object—places the image on the rod-rich periphery of the retina, avoiding the central night blind spot. Staring directly can make a dim object disappear.

25. C — The IM SAFE checklist (Illness, Medication, Stress, Alcohol, Fatigue, Emotion) assesses the pilot's personal fitness for flight. It is a self-assessment as important as the aircraft checklist.

26. C — Night VFR fuel rules require enough fuel to reach the destination plus 45 minutes at normal cruise power. The extra reserve over the day requirement reflects the reduced landing options in darkness.

27. B — Upon engine failure, the pilot's first action is to establish best glide speed, maximizing the distance and time available to reach a landing site. Only then does the pilot select a site and attempt a restart.

28. C — Aircraft position lights are red on the left wingtip, green on the right wingtip, and white on the tail. This arrangement lets a pilot determine another aircraft's direction of travel at night.

29. A — A VFR flight plan's primary purpose is to provide search-and-rescue protection. It provides no ATC separation and does not authorize airspace entry.

30. B — A private pilot certificate generally does not permit acting as PIC for compensation or hire. It does allow carrying passengers on personal flights and sharing pro rata expenses.

31. C — An annual inspection is required for all aircraft within the preceding 12 calendar months. Unlike the 100-hour inspection, the annual applies regardless of how the aircraft is operated.

32. C — When converging at the same altitude, the aircraft to the other's right has the right-of-way. The pilot who sees converging traffic on the left must give way.

33. B — Maneuvering speed decreases as the aircraft's weight decreases, because a lighter airplane reaches its limiting load factor at a lower speed. The appropriate V_A is therefore lower when lightly loaded.

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

35. A — A cold front moves fast and produces a narrow band of intense weather with rapid clearing behind it. A warm front, by contrast, brings widespread layered clouds and prolonged precipitation.

36. B — The dew point is the temperature to which air must be cooled to become saturated, at which moisture condenses into visible form. A small temperature/dew-point spread signals air near saturation.

37. B — A steady green light gun signal to an aircraft in flight means cleared to land. The same steady green on the ground means cleared for takeoff.

38. C — Excluding aircraft in distress, the airplane has the lowest right-of-way priority because it is the most maneuverable. The least maneuverable aircraft, the balloon, has the highest priority.

39. C — Above 14,000 feet MSL, the required minimum flight crew must use supplemental oxygen continuously. Between 12,500 and 14,000 feet, oxygen is required only after 30 minutes.

40. A — The color of 100LL aviation fuel is blue. Grade 80 is red and grade 100 is green, and using the wrong fuel can be catastrophic.

41. B — Spatial disorientation is best counteracted by trusting the flight instruments rather than misleading inner-ear sensations. Believing the instruments is essential when outside references are lost.

42. A — A magneto generates its own electrical current independently of the battery and alternator, so the engine continues running through a complete electrical failure. This self-powered design is a key safety feature.

43. B — The minimum age to be issued a private pilot certificate in the airplane category is 17 years old. A pilot may take the knowledge test and solo earlier than this.

44. C — A flight review must be completed within the preceding 24 calendar months to act as pilot-in-command. It consists of at least one hour of ground and one hour of flight training.

45. A — A forward center of gravity makes the airplane more stable but raises the stall speed, because the tail must produce more downforce. It also increases approach and landing speeds.

46. A — The standard traffic pattern uses left turns unless otherwise indicated by charts or a segmented circle. A right-hand pattern is used where terrain, obstacles, or noise abatement require it.

47. C — The mature stage is most hazardous because it contains both updrafts and downdrafts with heavy precipitation, lightning, and the greatest turbulence. The onset of rain reaching the surface marks this phase.

48. A — A VFR flight plan must be closed by the pilot upon arrival; ATC does not close it automatically. Failing to close it triggers an unnecessary search.

49. B — Induced drag is greatest at low airspeed and high angle of attack, where the wingtip vortices are strongest. It decreases as airspeed increases.

50. B — The radio station license is not required for a domestic flight, only for international operations. The airworthiness certificate, registration, operating limitations, and weight-and-balance data must always be aboard.

51. A — Leaning the mixture at altitude restores the proper fuel-air ratio as air density decreases. Without leaning, the mixture becomes excessively rich, causing roughness and plug fouling.

52. A — The minimum safe altitude over a congested area is 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet. This provides margin for an emergency landing clear of people and property.

53. C — The heading indicator should be realigned with the magnetic compass during straight-and-level, unaccelerated flight, when the compass reads accurately. Turning or accelerating introduces compass errors.

54. C — A temperature inversion traps moisture and pollutants beneath a warm layer, producing smooth but stable air with restricted visibility. The stable layer suppresses turbulence and convective clouds.

55. A — Lift increases with the square of airspeed, so doubling speed roughly quadruples lift. This squared relationship explains why small airspeed changes have large effects.

56. C — A "hot" Restricted Area may be entered only with permission from the controlling agency. Hazardous activity such as live fire makes unauthorized entry dangerous.

57. B — The macho attitude ("I can do it") is countered by the antidote "Taking chances is foolish." Recognizing the attitude allows the pilot to apply the antidote and make a safer decision.

58. B — An ELT transmits on 121.5 MHz (older units) and 406 MHz (modern, satellite-monitored) to aid search and rescue. The 406 MHz signal provides far better detection and positioning.

59. C — The standard temperature lapse rate is approximately 2°C per 1,000 feet of altitude gained. This baseline underlies density-altitude calculations and performance planning.

60. A — Stall speed increases with greater weight, higher load factor, and wing contamination, but a decrease in load factor lowers stall speed. Reducing load factor reduces the speed at which the critical angle is reached.