

PRACTICE EXAM 23 (60 QUESTIONS)

1. To file and fly IFR, the pilot in command must hold an instrument rating and have logged, within the preceding 6 calendar months, the experience required by:

- A. Section 61.57(c) covering approaches, holding, and course tracking
- B. Section 91.205 covering the required instrument equipment
- C. Section 61.23 covering the required medical certificate class
- D. Section 91.103 covering the preflight planning requirements

2. The lateral limits of a localizer course at the runway threshold are designed to produce a full-scale deflection of approximately:

- A. Five degrees on either side of the course centerline
- B. 2.5 degrees on either side of the course centerline
- C. Ten degrees total across the full course width
- D. One degree on either side regardless of runway length

3. A "DH" (Decision Height) is associated with which type of approach?

- A. A non-precision approach using only lateral guidance
- B. A precision approach with an electronic glidepath
- C. A circling approach to a runway not aligned for straight-in
- D. A contact approach requested by the pilot in visual conditions

4. The required VOR equipment check for IFR must be recorded with the date, place, bearing error, and:

- A. The signature of the person performing the check

- B. The serial number of the VOR receiver tested
 - C. The aircraft's total time in service at the check
 - D. The forecast weather conditions at the check location
5. A "VDP" (Visual Descent Point) is found on which type of approach procedure?
- A. A non-precision straight-in approach procedure
 - B. A precision ILS approach with a glideslope
 - C. A circling-only approach to the airport
 - D. A radar approach controlled entirely by ATC
6. Under the "1-2-3 rule," an alternate airport is required when the destination forecast, for one hour before to one hour after the ETA, shows a ceiling less than 2,000 feet or visibility less than:
- A. 2 statute miles at the destination airport
 - B. 3 statute miles at the destination airport
 - C. 1 statute mile at the destination airport
 - D. 5 statute miles at the destination airport
7. The standard service volume of a high-altitude VOR provides usable signal coverage to a range that varies with altitude, up to a maximum of:
- A. 40 nautical miles at all altitude bands
 - B. 25 nautical miles for terminal operations
 - C. 130 nautical miles at the highest altitudes
 - D. 100 nautical miles regardless of the altitude
8. The maximum holding airspeed between 6,001 and 14,000 feet MSL is:

- A. 200 knots indicated airspeed
- B. 265 knots indicated airspeed
- C. 230 knots indicated airspeed
- D. 175 knots indicated airspeed

9. A "maltese cross" symbol on an approach chart profile view marks the:

- A. Visual descent point on the final approach segment
- B. Missed approach holding fix for the procedure
- C. Airport rotating beacon location on the field
- D. Final approach fix for the non-precision approach

10. The pitot-static system inspection required for IFR flight must be completed within the preceding:

- A. 12 calendar months by a certificated mechanic
- B. 6 calendar months along with the VOR check
- C. 24 calendar months by an appropriately rated facility
- D. 30 days before each IFR flight is conducted

11. "MSA" depicted on an approach chart guarantees obstacle clearance of:

- A. 500 feet within 10 nautical miles of the navaid
- B. 1,000 feet within 25 nautical miles of the reference point
- C. 2,000 feet within 30 nautical miles of the airport
- D. 1,500 feet within 22 nautical miles of the fix

12. A transponder with Mode C (altitude reporting) must be tested and inspected within the preceding ___ for use in controlled airspace:

- A. 6 calendar months by the pilot in command
- B. 12 calendar months by the aircraft operator
- C. 30 days before each flight in the airspace
- D. 24 calendar months by an approved facility

13. The "FAF" (Final Approach Fix) on a precision ILS approach is identified by:

- A. The point of glideslope interception at the published altitude
- B. The maltese cross symbol on the profile view
- C. The first step-down fix after the initial approach fix
- D. The middle marker located near the runway threshold

14. IFR fuel requirements under Section 91.167 mandate enough fuel to reach the destination, then the alternate if required, plus a reserve to fly for:

- A. 30 minutes at normal cruising speed after the alternate
- B. 60 minutes at the maximum continuous power setting
- C. 45 minutes at normal cruising speed after the alternate
- D. 15 minutes beyond reaching the alternate airport

15. The lowest published altitude on an airway that ensures both obstacle clearance and acceptable navigation signal reception is the:

- A. Minimum reception altitude for the airway
- B. Minimum obstruction clearance altitude only
- C. Maximum authorized altitude for the segment
- D. Minimum en route altitude for the airway

16. A "TAA" (Terminal Arrival Area) is associated primarily with which approach type?

- A. A conventional ILS approach with feeder routes
- B. An RNAV (GPS) approach with structured arrival sectors
- C. A localizer back-course non-precision approach
- D. A radar-monitored surveillance approach

17. Supplemental oxygen is required for the required flight crew at all times above a cabin pressure altitude of:

- A. 12,500 feet mean sea level cabin altitude
- B. 14,000 feet mean sea level cabin altitude
- C. 10,000 feet mean sea level cabin altitude
- D. 15,000 feet mean sea level cabin altitude

18. The "MRA" (Minimum Reception Altitude) on an airway is the lowest altitude at which:

- A. Obstacle clearance is provided along the entire route segment
- B. The aircraft is guaranteed continuous radar coverage
- C. An intersection can be determined from navigation signals
- D. The pilot is authorized to cancel IFR and proceed visually

19. A "VOT" (VOR Test Facility) check is within tolerance for IFR use when the indication reads:

- A. 0 degrees FROM or 180 degrees TO, within plus or minus 4 degrees
- B. The published radial within plus or minus 6 degrees of error
- C. Any steady value that does not noticeably fluctuate over time
- D. The reciprocal of the runway heading within 2 degrees of error

20. The decision altitude on a Category I ILS is referenced to mean sea level, and the typical height above touchdown is:

- A. 100 feet above the touchdown zone elevation
- B. 50 feet above the runway threshold elevation
- C. 300 feet above the airport reference point
- D. 200 feet above the touchdown zone elevation

21. The maximum holding airspeed at or below 6,000 feet MSL for civil aircraft is:

- A. 230 knots indicated airspeed
- B. 200 knots indicated airspeed
- C. 175 knots indicated airspeed
- D. 265 knots indicated airspeed

22. An "IAF" (Initial Approach Fix) marks the point where:

- A. The final descent to the runway threshold begins
- B. The missed approach climb gradient is first measured
- C. The instrument approach procedure begins
- D. The aircraft must contact the tower for landing clearance

23. Which instrument provides the primary source of bank information during a partial-panel approach after a vacuum system failure?

- A. The attitude indicator's miniature aircraft and bank pointer
- B. The magnetic compass read during steady-heading segments
- C. The turn coordinator, which is typically electrically driven
- D. The vertical speed indicator cross-checked with the altimeter

24. A "STAR" is a charted procedure that primarily provides a transition:

- A. From the runway to the en route structure on departure
- B. Around the airport during a circling approach maneuver
- C. Between two intersecting airways at a junction fix
- D. From the en route structure to the approach environment

25. The "MOCA" (Minimum Obstruction Clearance Altitude) guarantees obstacle clearance for the full segment but navigation signal coverage only within:

- A. 12 nautical miles of the VOR station
- B. 22 nautical miles of the VOR station
- C. 35 nautical miles of the VOR station
- D. 40 nautical miles of the VOR station

26. The required equipment for IFR flight includes, in addition to VFR equipment, a two-way radio, navigation equipment suitable for the route, and a:

- A. Gyroscopic rate-of-turn (or equivalent) indicator and a sensitive altimeter
- B. Radar altimeter with a terrain awareness warning system
- C. Weather radar display and a second attitude indicator
- D. Distance measuring equipment and an autopilot system

27. A "feeder route" on an approach chart connects the:

- A. Final approach fix to the runway threshold on final
- B. En route structure to the initial approach fix
- C. Missed approach point to the holding pattern
- D. Visual descent point to the touchdown zone

28. The transition altitude in the United States, above which the altimeter is set to 29.92, is:

- A. 10,000 feet mean sea level for all aircraft
- B. 18,000 feet mean sea level, the base of the flight levels
- C. 14,500 feet mean sea level in controlled airspace
- D. 24,000 feet mean sea level for high-altitude operations

29. IFR currency lapses if the required tasks are not performed within 6 calendar months; the pilot then has an additional 6-month grace period during which currency may be regained by:

- A. Completing an instrument proficiency check with an examiner
- B. Filing and flying any IFR flight in actual conditions
- C. Logging three night takeoffs and landings to a full stop
- D. Performing the required tasks with or without a safety pilot

30. The "MAP" (Missed Approach Point) on a non-precision approach may be defined by a navigation fix, a DME distance, or:

- A. A specified time from the final approach fix at a given groundspeed
- B. The point where the glideslope reaches the decision height
- C. Crossing the runway threshold at the touchdown zone elevation
- D. The minimum safe altitude circle on the approach chart

31. A "compulsory reporting point" is depicted on an IFR en route chart as a:

- A. Open (unfilled) triangle along the airway route
- B. Square symbol with the fix name beside it
- C. Circle with an X inside it on the airway
- D. Solid (filled) triangle along the airway route

32. The standard rate of turn for instrument flight produces a complete 360-degree turn in:

- A. One minute at any airspeed flown
- B. Three minutes regardless of bank angle
- C. Four minutes at high cruising speeds
- D. Two minutes at the standard rate

33. An "LPV" approach line of minimums on an RNAV (GPS) chart requires which capability?

- A. A non-WAAS IFR GPS receiver only
- B. A ground-based localizer and glideslope
- C. A WAAS-capable receiver providing vertical guidance
- D. Dual VOR receivers tuned to separate stations

34. The minimum equipment for IFR includes a clock displaying hours, minutes, and seconds because:

- A. It records the aircraft's total time in service automatically
- B. It satisfies an insurance documentation requirement for IFR
- C. It displays coordinated universal time for international filing
- D. Accurate timing is needed for timed approaches and holding

35. A "procedure turn" must be completed within the distance specified on the chart, which is commonly:

- A. 5 nautical miles from the final approach fix
- B. 10 nautical miles from the procedure turn fix
- C. 15 nautical miles from the initial approach fix
- D. 20 nautical miles from the missed approach point

36. The "VV" entry in a METAR (e.g., VV004) reports:

- A. The variable visibility averaged over the hour
- B. The vertical velocity of the cloud layer aloft
- C. The vertical visibility into an indefinite ceiling
- D. The visibility variation between two reported values

37. A pilot must report to ATC, without being asked, a change in average true airspeed at cruise of:

- A. 5 knots from the filed true airspeed value
- B. 10 percent regardless of the actual knots involved
- C. 20 knots or more from the cruising airspeed
- D. 5 percent or 10 knots, whichever is greater

38. The "MEA" on an airway segment guarantees:

- A. Radar coverage but not navigation signal reception
- B. Separation from all other IFR traffic on the route
- C. The lowest altitude usable only in an emergency
- D. Obstacle clearance and acceptable navigation signal reception

39. A Category I ILS generally provides minimums no lower than a decision height of 200 feet and a visibility (RVR) of approximately:

- A. 1,800 feet runway visual range or one-half statute mile
- B. 1,200 feet runway visual range for all approaches
- C. 2,400 feet runway visual range as the standard
- D. 600 feet runway visual range with special authorization

40. The holding airspeed limit above 14,000 feet MSL for civil aircraft is a maximum of:

- A. 265 knots indicated airspeed
- B. 230 knots indicated airspeed
- C. 200 knots indicated airspeed
- D. 175 knots indicated airspeed

41. A "hold-in-lieu-of-procedure-turn" (HILPT) serves the same function as a procedure turn, namely to:

- A. Sequence arriving traffic during high-volume periods
- B. Reverse course and align with the final approach
- C. Provide the missed approach holding pattern after landing
- D. Establish the visual descent point on the final segment

42. The lowest altitude at which an airway intersection can be reliably identified using navigation signals is the:

- A. Minimum reception altitude for that intersection
- B. Minimum en route altitude for the airway segment
- C. Minimum obstruction clearance altitude for the route
- D. Maximum authorized altitude for the airway

43. An RNAV (GPS) approach with "LNAV" minimums provides:

- A. Lateral course guidance without vertical guidance
- B. Vertical guidance comparable to an ILS glideslope
- C. Both lateral and vertical guidance to a decision altitude
- D. Circling guidance only with no straight-in capability

44. A pilot may log instrument time only when:

- A. Operating under an IFR flight plan in any conditions
- B. Flying above 18,000 feet in the flight levels
- C. Operating the aircraft solely by reference to instruments
- D. Receiving radar vectors from an air traffic controller

45. The "OROCA" (Off-Route Obstruction Clearance Altitude) provides:

- A. Navigation signal coverage guaranteed throughout the grid
- B. Radar vectoring altitudes assigned by the controller
- C. The minimum altitude for filing a direct IFR route
- D. Obstruction clearance within a latitude/longitude grid block

46. A "DME arc" on an approach is flown by maintaining a constant:

- A. Heading toward the VOR throughout the arc segment
- B. Inbound radial to the station during the maneuver
- C. DME distance from the station defining the arc
- D. Rate of descent following the curved ground path

47. The required medical certificate for a private pilot exercising instrument privileges is, at minimum, a:

- A. Third-class medical certificate or BasicMed where applicable
- B. First-class medical renewed every six calendar months
- C. Second-class medical certificate for all instrument flight
- D. Special issuance authorization regardless of the class held

48. A "T" inside an inverted triangle in the chart notes indicates the pilot should consult the:

- A. Circling minimums table for that specific runway
- B. Non-standard takeoff minimums and departure procedures
- C. Missed approach holding pattern instructions only
- D. Alternate airport minimums for that destination

49. The maximum bank angle that a standard-rate turn requires increases as:

- A. The aircraft's gross weight decreases during the flight
- B. The outside air temperature drops at higher altitudes
- C. The true airspeed of the aircraft increases
- D. The altimeter setting is adjusted to a higher value

50. An "LP" (Localizer Performance) line of minimums on an RNAV approach provides:

- A. Vertical guidance equivalent to a precision glideslope
- B. A barometric glidepath like the LNAV/VNAV minimums
- C. Lateral guidance with angular sensitivity and no vertical guidance
- D. Course guidance usable only for circling at the airport

51. The "ETA" reporting requirement in a non-radar environment includes revising the estimate to ATC when it changes by more than:

- A. One minute from the previously reported estimate
- B. Three minutes from the previously reported estimate
- C. Five minutes from the previously reported estimate
- D. Ten minutes from the previously reported estimate

52. A "circling approach" with Category A minimums of "500-1" requires a ceiling of:

- A. 500 feet per minute descent rate on the final approach
- B. 500 feet and 1 statute mile visibility to circle
- C. A 500-foot final approach segment before the runway
- D. 5,000 feet of visibility within one nautical mile

53. The "transition" segments connecting an en route fix to an RNAV STAR are charted to:

- A. Provide a defined path and altitudes into the arrival
- B. Replace the need for an instrument approach procedure
- C. Establish holding patterns for the destination airport
- D. Define the missed approach climb gradient over terrain

54. A pilot who has consumed alcohol may not act as a required crewmember within ____ or with a blood alcohol concentration of 0.04 percent or greater:

- A. 8 hours ("bottle to throttle") of consuming alcohol
- B. 4 hours of consuming any alcoholic beverage
- C. 12 hours regardless of the quantity consumed
- D. 24 hours after the last alcoholic drink

55. The "minimum vectoring altitude" used by controllers differs from the MEA in that the MVA:

- A. Is always higher than the corresponding MEA on the route
- B. Is published on the approach charts for pilot reference
- C. Can be lower because it relies on radar coverage for clearance
- D. Applies only during the missed approach portion of flight

56. A non-directional beacon (NDB) approach is flown using which receiver and display?

- A. The automatic direction finder showing relative bearing
- B. The VOR receiver with a course deviation indicator
- C. The glideslope receiver paired with a localizer needle
- D. The distance measuring equipment readout alone

57. The "expect-further-clearance" time in a holding clearance is most critical because it:

- A. Specifies the exact time to begin the instrument approach
- B. Indicates when the pilot must report reaching the fix
- C. Authorizes an immediate descent to the holding altitude
- D. Provides a time to leave the fix if communications are lost

58. A "cruise" clearance to an altitude authorizes the pilot to:

- A. Climb above the assigned altitude at the pilot's discretion
- B. Maintain only the exact altitude stated with no flexibility
- C. Fly at any airspeed without regard to airspace limitations
- D. Use any altitude from the minimum IFR altitude up to that assigned

59. The wind direction in a METAR is referenced to true north, while the wind given by the control tower is referenced to:

- A. The runway heading currently in use for landing
- B. True north identical to the METAR reference
- C. Magnetic north as the pilot reads on the heading indicator
- D. The aircraft's magnetic course on final approach

60. A pilot must have an alternate listed and the appropriate fuel when the destination weather requires it; the alternate itself must meet the alternate minimums, which for an airport with a precision approach are typically:

- A. A 400-foot ceiling and 1 statute mile visibility
- B. A 1,000-foot ceiling and 3 statute miles visibility
- C. A 200-foot ceiling and one-half mile visibility
- D. A 600-foot ceiling and 2 statute miles visibility

+ Answer Key

1. A — IFR currency is governed by §61.57(c), which requires within the preceding 6 calendar months six instrument approaches, holding procedures, and intercepting and tracking courses. These tasks maintain instrument proficiency. The other sections cover equipment, medical, and preflight planning, not recent instrument experience.

2. B — A localizer is tailored so full-scale deflection occurs at approximately 2.5 degrees on either side of centerline (about 5 degrees total course width). This makes it more sensitive than a VOR. The angular course physically narrows toward the runway.

3. B — A Decision Height is associated with a precision approach that provides an electronic glidepath, such as an ILS. The DH marks the go/no-go point on the glideslope. Non-precision approaches use an MDA instead.

4. A — The recorded VOR check must include the date, place, bearing error, and the signature of the person performing the check. These entries document compliance with §91.171. The signature attests that the check was performed and within tolerance.

5. A — A Visual Descent Point is published on a non-precision straight-in approach, marking where a normal descent to landing may begin with the runway in sight. Precision approaches use a glidepath instead. The VDP supports a stabilized final descent on non-precision procedures.

6. B — Under the 1-2-3 rule, an alternate is required when the destination forecast shows a ceiling below 2,000 feet or visibility below 3 statute miles within the one-hour window around the ETA. Meeting both thresholds exempts the alternate. Failing either mandates listing a suitable alternate.

7. C — A high-altitude VOR's standard service volume extends to a maximum of about 130 nautical miles at the highest altitude band. Coverage range increases with altitude up to that limit. Knowing the service volume prevents relying on the signal beyond its usable range.

8. C — The maximum holding airspeed between 6,001 and 14,000 feet MSL is 230 knots indicated airspeed. Staying within the limit keeps the aircraft inside protected holding airspace. Lower and higher bands use 200 and 265 knots respectively.

9. D — The maltese cross on the profile view marks the final approach fix for a non-precision approach. It identifies where the final descent segment begins. Recognizing it helps the pilot time the descent and configure for landing.

10. C — The pitot-static system inspection for IFR must be completed within the preceding 24 calendar months by an appropriately rated facility under §91.411. This biennial check ensures accurate altitude and airspeed indications. An out-of-date check disqualifies the aircraft for IFR.

11. B — An MSA guarantees 1,000 feet of obstacle clearance within 25 nautical miles of the depicted reference point. It is an emergency reference, not a navigation-signal or separation guarantee. Pilots use it for terrain awareness off the procedure.

12. D — A Mode C transponder must be tested and inspected within the preceding 24 calendar months by an approved facility under §91.413. This ensures accurate altitude reporting and replies. An overdue check disqualifies its use in controlled airspace.

13. B — On a precision ILS approach, the FAF is identified by the maltese cross symbol on the profile view, which coincides with glideslope interception at the published altitude. The cross marks the start of the final segment. This is the standard charting convention.

14. C — IFR fuel under §91.167 requires reaching the destination, then the alternate if required, plus 45 minutes at normal cruising speed. This reserve protects against delays and diversions. Planning less violates the IFR reserve requirement.

15. D — The minimum en route altitude (MEA) is the lowest published airway altitude ensuring both obstacle clearance and acceptable navigation signal reception. It balances terrain and signal needs. Flying at or above the MEA keeps the aircraft safe and navigable.

16. B — A Terminal Arrival Area is associated with RNAV (GPS) approaches, providing structured arrival sectors with minimum altitudes into the procedure. It replaces feeder routes and procedure turns on many RNAV approaches. Each sector publishes a safe transition altitude.

17. B — Supplemental oxygen is required for the required flight crew at all times above 14,000 feet cabin pressure altitude under §91.211. There is no time allowance at this altitude. Below it, time-limited allowances apply between 12,500 and 14,000 feet.

18. C — The Minimum Reception Altitude is the lowest altitude at which an intersection can be determined from navigation signals. It ensures the fix-defining signals are receivable. It may be higher than the MEA where signal reception is the limiting factor.

19. A — A VOT check is within tolerance when the indication reads 0 degrees FROM or 180 degrees TO, within plus or minus 4 degrees. The VOT transmits a fixed omnidirectional signal for this purpose. A reading outside ± 4 degrees means the receiver is out of tolerance for IFR.

20. D — A Category I ILS decision altitude is referenced to MSL and typically corresponds to 200 feet above the touchdown zone elevation. This marks the precision approach go/no-go point. Reaching it without visual references requires a missed approach.

21. B — The maximum holding airspeed at or below 6,000 feet MSL is 200 knots indicated airspeed for civil aircraft. Observing it keeps the aircraft within protected holding airspace. Higher bands apply at higher altitudes.

22. C — An Initial Approach Fix marks the point where the instrument approach procedure begins. From the IAF the aircraft transitions through the intermediate and final segments. It is the entry into the published procedure.

23. C — The turn coordinator is typically electrically driven, so it remains operational after a vacuum failure and becomes the primary bank reference on partial panel. The vacuum-driven attitude indicator is unreliable in that scenario. The turn coordinator shows rate of turn and roll, making it the go-to bank instrument when the gyros fail.

24. D — A STAR provides a transition from the en route structure to the approach environment for arriving aircraft. It standardizes arrival routings and reduces frequency congestion. It does not replace the instrument approach itself.

25. B — The MOCA guarantees obstacle clearance for the full segment but navigation signal coverage only within 22 nautical miles of the VOR. Beyond that distance, signal reception is not assured at the MOCA. This is why the MEA is generally flown for navigation reliability.

26. A — Beyond VFR equipment, IFR requires a two-way radio, suitable navigation equipment, a gyroscopic rate-of-turn (or equivalent) indicator, and a sensitive altimeter, among the §91.205 instruments. These support controlled flight and navigation without outside reference. The "GRABCARD" mnemonic captures the full list.

27. B — A feeder route connects the en route structure to the initial approach fix, providing a charted path into the approach. It bridges the airway and the approach segments. Using it ensures alignment and obstacle clearance entering the procedure.

28. B — The U.S. transition altitude is 18,000 feet MSL, the base of the flight levels, above which the altimeter is set to 29.92. Below it, the local altimeter setting is used. This standardizes altitude references in the high-altitude structure.

29. D — During the 6-month grace period after currency lapses, the pilot may regain currency by performing the required tasks (approaches, holding, tracking) with a safety pilot or in actual conditions, without needing an IPC. Beyond the grace period, an instrument proficiency check is required. The grace period allows self-restoration of currency.

30. A — The missed approach point on a non-precision approach may be defined by a fix, a DME distance, or a specified time from the FAF at a given groundspeed. Timing is a common method where no fix defines the MAP. The pilot uses the appropriate method published on the chart.

31. D — A compulsory reporting point is depicted on an IFR en route chart as a solid (filled) triangle. An open triangle indicates an on-request reporting point. Recognizing the symbol tells the pilot where reports are required in a non-radar environment.

32. D — A standard-rate turn (3 degrees per second) completes a 360-degree turn in two minutes. This rate is the basis for timed turns on partial panel. Knowing it allows accurate heading changes when the heading indicator is unavailable.

33. C — An LPV line of minimums requires a WAAS-capable receiver that provides vertical guidance to ILS-like precision. Non-WAAS GPS cannot fly to LPV minimums. The WAAS corrections supply the integrity and accuracy the LPV approach needs.

34. D — The IFR clock must display hours, minutes, and seconds because accurate timing is needed for timed approaches and holding. Timed segments depend on a reliable seconds display. A clock lacking seconds does not meet the requirement.

35. B — A procedure turn must be completed within the distance specified on the chart, commonly 10 nautical miles from the procedure turn fix. This remain-within distance bounds the maneuver. Exceeding it could place the aircraft outside obstacle-protected airspace.

36. C — "VV004" reports the vertical visibility (400 feet) into an indefinite ceiling such as fog. It replaces a cloud-layer report when the sky is obscured. The value tells the pilot how far up visibility extends, not a cloud base.

37. D — A pilot must report, without being asked, a change in average true airspeed at cruise of 5 percent or 10 knots, whichever is greater. This report keeps ATC's flight progress accurate. Knowing the threshold prevents missed notifications.

38. D — The minimum en route altitude guarantees obstacle clearance and acceptable navigation signal reception along the airway segment. It does not by itself guarantee radar coverage or traffic separation. Flying at or above the MEA keeps the aircraft safe and navigable.

39. A — A Category I ILS generally provides minimums no lower than a 200-foot decision height and an RVR of about 1,800 feet (roughly one-half statute mile). These are the standard Cat I limits. Lower minimums require Category II or III equipment and authorization.

40. A — The maximum holding airspeed above 14,000 feet MSL is 265 knots indicated airspeed for civil aircraft. This is the highest band in the holding-speed structure. Observing it keeps the aircraft within protected airspace.

41. B — A hold-in-lieu-of-procedure-turn serves the same function as a procedure turn: to reverse course and align the aircraft with the final approach. The pilot flies one or more circuits to get established inbound. It is used at fixes where a holding pattern replaces a conventional course reversal.

42. A — The minimum reception altitude is the lowest altitude at which an airway intersection can be reliably identified from navigation signals. It ensures the defining signals are receivable. It can be higher than the MEA where reception governs.

43. A — An RNAV (GPS) approach with LNAV minimums provides lateral course guidance without vertical guidance. The pilot descends by step-down to the MDA. Vertical guidance requires LNAV/VNAV or LPV minimums.

44. C — Instrument flight time may be logged only when operating the aircraft solely by reference to instruments under actual or simulated conditions. Being on an IFR plan or receiving vectors alone does not qualify. The defining factor is control by reference to instruments.

45. D — OROCA provides obstruction clearance within a latitude/longitude grid block for off-route flight. It is an obstacle-clearance reference, not a guarantee of navigation signal or radar service. Pilots use it for terrain awareness on direct routes.

46. C — A DME arc is flown by maintaining a constant DME distance from the station, defining the curved path. The pilot makes small heading adjustments to hold the distance. Smooth corrections keep the aircraft on the arc.

47. A — A private pilot exercising instrument privileges needs at least a third-class medical certificate, or may operate under BasicMed where its conditions apply. The medical confirms fitness to fly. The class required scales with the operation conducted.

48. B — A "T" in an inverted triangle in the chart notes directs the pilot to the non-standard takeoff minimums and (obstacle) departure procedures. It signals that default minimums do not apply. Checking the referenced section is required before departure.

49. C — A standard-rate turn requires more bank angle as the true airspeed increases, because a faster aircraft needs a steeper bank to hold 3 degrees per second. This is why high-speed aircraft use a half-standard rate. The rule of thumb ($TAS/10 + 7$) reflects the relationship.

50. C — An LP line of minimums provides lateral guidance with angular sensitivity similar to a localizer but no vertical guidance. It is a non-precision line used where terrain prevents LPV vertical guidance. The pilot descends by step-down to the MDA.

51. B — In a non-radar environment, the pilot revises the ETA to ATC when it changes by more than 3 minutes from the previous estimate. This keeps the non-radar position picture accurate. Timely revisions support traffic separation without radar.

52. B — Circling minimums of "500-1" mean a 500-foot ceiling and 1 statute mile visibility are required to conduct the circling maneuver. The numbers express ceiling and visibility, not descent rate or distance. Meeting both is mandatory before circling to land.

53. A — Transition segments connecting an en route fix to an RNAV STAR provide a defined path and altitudes into the arrival. They guide the aircraft from the structure onto the STAR. They do not replace the approach or define the missed approach.

54. A — A pilot may not act as a required crewmember within 8 hours of consuming alcohol ("bottle to throttle") or with a blood alcohol concentration of 0.04 percent or greater. The rule also bars flying while under the influence. The 8-hour figure is a minimum, not a guarantee of fitness.

55. C — The minimum vectoring altitude can be lower than the MEA because it relies on radar coverage to ensure obstacle clearance. It is used by controllers and not published on pilot charts. Radar monitoring allows the lower vectoring altitudes.

56. A — An NDB approach is flown using the automatic direction finder, whose needle points to the station and shows relative bearing. The ADF is the receiver paired with NDB navigation. Understanding relative bearing is key to tracking to or from the beacon.

57. D — The expect-further-clearance time is most critical because it provides a time to leave the holding fix if two-way communications are lost. It supports the lost-comm timing rules. Without it, a lost-comm aircraft would lack a clearance-limit departure time.

58. D — A cruise clearance authorizes the pilot to use any altitude from the minimum IFR altitude up to and including the assigned altitude, and to execute an approach at the destination. It provides altitude flexibility within that block. Once the pilot reports leaving an altitude downward, it may not be reclaimed without a new clearance.

59. C — METAR winds are referenced to true north, while tower-issued winds are referenced to magnetic north, matching what the pilot reads on the heading indicator. Knowing the reference avoids confusion when comparing reported and assigned winds. The difference is the local magnetic variation.

60. D — For an airport with a precision approach, the standard alternate minimums are typically a 600-foot ceiling and 2 statute miles visibility. For a non-precision approach the figures are higher (800 and 2). These minimums ensure the alternate is usable if a diversion is needed.