PRACTICE EXAM 27 (60 QUESTIONS)

1. What is the frequency band in which VOR stations transmit their navigation signals?

A. The low-frequency band shared with non-directional radio beacons

B. The ultra-high-frequency band used by distance measuring equipment

C. The very-high-frequency band between 108.0 and 117.95 MHz

D. The high-frequency band reserved for long-range oceanic navigation

2. What is the primary limitation of VOR navigation compared with GPS?

A. The VOR provides distance but no bearing to the station

B. The VOR signal is line-of-sight and limited by range and altitude

C. The VOR cannot be used for any instrument approach procedure

D. The VOR requires a continuous data link to a ground station

3. What does an NDB use that makes it susceptible to certain errors?

A. A low or medium frequency signal affected by terrain and weather

B. A very-high-frequency signal limited strictly to line of sight

C. A satellite-based signal requiring integrity monitoring to function

D. An ultra-high-frequency pulse pair measuring slant-range distance

4. What instrument is used to navigate using an NDB signal?

A. The automatic direction finder pointing toward the station

B. The course deviation indicator centered on a selected radial

C. The distance measuring equipment displaying nautical miles

D. The horizontal situation indicator showing glide slope data

5. What is "station passage" indicated by when tracking inbound to a VOR?

A. A steady full deflection of the course deviation indicator needle

B. A reversal of the TO/FROM indication as the aircraft crosses overhead

C. An audible identifier change broadcast by the VOR station

D. A sudden increase in the distance measuring equipment readout

6. What is the purpose of identifying a navaid by its Morse code before use?

A. To determine the published service volume of the station

B. To measure the slant-range distance to the navaid facility

C. To confirm the correct station is tuned and operating normally

D. To set the omni bearing selector to the proper course

7. When intercepting a VOR radial, what determines an efficient intercept angle?

A. The distance to the station alone, regardless of course error

B. The aircraft's altitude relative to the station elevation

C. The amount of course deviation and the desired closure rate

D. The wind direction at the aircraft's current cruising altitude

8. What does a "fly-by" waypoint on a GPS procedure indicate?

A. The aircraft must fly directly over the waypoint before turning

B. The turn may begin before the waypoint to smooth the course change

C. The waypoint marks the missed approach holding pattern entry

D. The waypoint requires a mandatory holding pattern to be flown

9. What does a "fly-over" waypoint require of the pilot?

A. The aircraft must cross directly over the waypoint before turning

B. The turn should be anticipated and begun before the waypoint

C. The waypoint may be bypassed if the course change is small

D. The waypoint marks only an altitude restriction, not a turn point

10. What is the effect of a crosswind while tracking a VOR radial?

A. It has no effect because the VOR corrects for wind automatically

B. It causes the TO/FROM flag to alternate during the tracking

C. It requires a wind correction angle to stay on the radial

D. It reverses the sense of the course deviation indicator needle

11. What does the localizer signal of an ILS provide to the pilot?

A. Vertical guidance to the runway touchdown zone elevation

B. Distance information to the runway threshold in nautical miles

C. The aircraft's altitude relative to the published glide path

D. Lateral guidance aligning the aircraft with the runway centerline

12. What is the typical width of a localizer course at the runway threshold?

A. Approximately ten degrees wide for easy interception

B. A fixed two nautical miles regardless of the runway length

C. Exactly five degrees wide for all installations everywhere

D. Tailored so the course is about 700 feet wide at the threshold

13. What does a back-course localizer approach require the pilot to remember?

A. The glide slope is fully usable on the back course as well

B. Distance measuring equipment is unavailable on a back course

C. Course needle indications may be reversed without an HSI

D. The localizer transmits on a different frequency for the back course

14. What is the function of distance measuring equipment (DME)?

A. To provide the magnetic bearing from the aircraft to the station

B. To display slant-range distance in nautical miles to the station

C. To indicate the aircraft's altitude above the navaid site

D. To transmit the aircraft's position to the air traffic controller

15. Why is DME distance called "slant range"?

A. Because it measures the horizontal ground distance precisely

B. Because it corrects automatically for the aircraft altitude

C. Because it varies with the aircraft's groundspeed and heading

D. Because it measures the direct line including the altitude difference

16. What does a marker beacon provide on an ILS approach?

A. Vertical guidance to the runway touchdown zone elevation

B. Position information at fixed points along the approach course

C. The localizer frequency for the runway being approached

D. Distance remaining to the runway threshold in nautical miles

17. What is the primary advantage of an RNAV system over conventional navaids?

A. It eliminates the need for any altimeter setting during flight

B. It allows point-to-point routing without overflying ground stations

C. It provides automatic terrain avoidance during all phases of flight

D. It removes the requirement for a transponder in controlled airspace

18. What does a "T" or "teardrop" course reversal accomplish on an approach?

A. It establishes the aircraft in the missed approach holding pattern

B. It provides lateral separation between aircraft on parallel finals

C. It reverses course to align the aircraft inbound on final approach

D. It marks the point where the final descent to the runway begins

19. What does a holding pattern's "standard" designation specify?

A. Left turns with a two-minute inbound leg at all altitudes

B. Right turns with a one-minute inbound leg below 14,000 feet

C. Alternating turn directions on each successive holding circuit

D. Turns whose direction depends on the prevailing surface wind

20. What is the maximum holding airspeed at 12,000 feet MSL for most aircraft?

A. 175 knots indicated airspeed for that particular altitude band

B. 230 knots indicated airspeed for all aircraft regardless of altitude

C. 265 knots indicated airspeed for the high-altitude holding band

D. 230 knots indicated airspeed for that altitude band by rule

21. What does a "direct entry" into a holding pattern involve?

A. Flying outbound parallel to the inbound course before turning back

B. Flying outbound at a thirty-degree offset before turning inbound

C. Crossing the fix and turning to follow the pattern in its direction

D. Flying opposite the holding course before reversing direction

22. What scan error occurs when a pilot focuses too long on one instrument?

A. Fixation, which causes other parameters to deviate unnoticed

B. Omission, which is skipping an instrument entirely in the scan

C. Emphasis, which is over-relying on a less important instrument

D. Inversion, which is reading an instrument's indication backward

23. What scan error is "omission" during instrument flight?

A. Staring at a single instrument for an excessive period of time

B. Reading an instrument's indication in the wrong sense entirely

C. Leaving an instrument out of the cross-check pattern entirely

D. Placing too much emphasis on one supporting instrument

24. What is the recommended primary reference during straight-and-level instrument flight?

A. The vertical speed indicator read continuously for pitch trends

B. The magnetic compass for both heading and bank information

C. The airspeed indicator used to set the precise pitch attitude

D. The attitude indicator, supported by the other instruments

25. What does the term "precession" describe in a gyroscopic instrument?

A. The loss of vacuum suction causing the rotor to slow down

B. A reaction to an applied force felt 90 degrees later in rotation

C. The interference of nearby magnetic fields on the gyro rotor

D. The instrument's tendency to return to a level indication

26. Why must the heading indicator be reset to the magnetic compass periodically?

A. The compass drifts steadily while the heading indicator stays fixed

B. The heading indicator reads true north and must be converted

C. The compass provides bank information the heading indicator lacks

D. The heading indicator's gyro precesses and drifts over time

27. What is "magnetic dip" and where is its effect greatest?

A. The pull of the compass card toward the magnetic poles, greatest near them

B. The lag of the compass during acceleration on an easterly heading

C. The oscillation of the compass card caused by engine vibration

D. The deviation of the compass caused by aircraft electrical systems

28. What does the acronym ANDS help a pilot remember about the compass?

A. The required documents that must be aboard for IFR flight

B. The sequence of a standard instrument approach procedure

C. Acceleration shows north, deceleration shows south on east-west headings

D. The order of the instrument scan during straight-and-level flight

29. What does the magnetic compass indicate when turning through north?

A. It leads the actual heading, showing a turn faster than real

B. It indicates the correct heading with no error during the turn

C. It shows a turn toward the opposite direction momentarily

D. It lags the actual heading, showing a turn slower than real

30. What is the purpose of a course deviation indicator (CDI)?

A. To show the aircraft's position relative to a selected course

B. To display the aircraft's altitude above the selected navaid

C. To indicate the rate of turn during a coordinated maneuver

D. To provide the aircraft's groundspeed corrected for the wind

31. What does full-scale deflection of a VOR CDI typically represent?

A. The aircraft is positioned directly over the VOR station

B. The VOR signal has been lost and the indication is unreliable

C. The aircraft is exactly on the selected radial centerline

D. The aircraft is 10 degrees or more off the selected course

32. What is the function of the omni bearing selector (OBS)?

A. To tune the VOR receiver to the correct station frequency

B. To select the desired course to or from the VOR station

C. To display the distance measuring equipment readout in miles

D. To identify the station by decoding its Morse code identifier

33. What does a "TO" indication on a VOR display tell the pilot?

A. The selected course will take the aircraft toward the station

B. The aircraft is flying outbound away from the tuned station

C. The VOR signal is unreliable and should not be used at all

D. The aircraft is positioned directly over the VOR station

34. What does an HSI integrate that simplifies the instrument scan?

A. The heading indicator and the course deviation indicator together

B. The attitude indicator and the vertical speed indicator together

C. The airspeed indicator and the altimeter pressure reading together

D. The turn coordinator and the magnetic compass heading together

35. What is the primary benefit of an RMI (radio magnetic indicator)?

A. It displays the glide slope and localizer guidance together

B. It shows the aircraft's pitch and bank attitude on one display

C. It provides the aircraft's altitude relative to the navaid site

D. It shows bearing to the station against a rotating compass card

36. What is the significance of the "cone of confusion" over a VOR?

A. It is the area where DME provides the most accurate distance

B. It is the region where the localizer course becomes most sensitive

C. It is the zone where the strongest VOR signal is received clearly

D. It is the area directly above the station where guidance is erratic

37. What does a "lead radial" help a pilot anticipate on an arc or course change?

A. The minimum altitude required to cross the final approach fix

B. The point at which to begin a turn onto the next course

C. The visibility minimum that applies to the circling approach

D. The location of the airport's primary instrument landing system

38. What is the effect of flying a DME arc with a tailwind on one side?

A. Drift requires adjusting the heading to maintain the arc distance

B. The arc distance remains constant without any heading change

C. The DME readout reverses direction during the affected segment

D. The aircraft must descend to maintain the proper arc radius

39. What does a "step-down fix" allow on a non-precision approach?

A. A lower minimum altitude after a charted obstacle is passed

B. The beginning of the missed approach climb segment of the procedure

C. The point where the procedure turn must be completed inbound

D. The entry into the holding pattern for a delayed approach

40. What is the purpose of a "visual descent point" (VDP) on an approach?

A. The point where the missed approach procedure must be started

B. The point from which a normal descent to the runway may begin

C. The altitude at which the aircraft levels off on the final segment

D. The fix where the final approach course is first intercepted

41. What does a precision approach provide that a non-precision approach does not?

A. Lateral guidance aligning the aircraft with the runway centerline

B. A published missed approach procedure for the runway

C. Distance information to the runway threshold from a navaid

D. Vertical guidance via a glide slope to the touchdown zone

42. What is the meaning of "MDA" on a non-precision approach?

A. The altitude at which a precision decision to land is made

B. The highest altitude allowed during the final approach segment

C. The lowest altitude permitted without the required visual references

D. The altitude at which the missed approach climb must begin

43. What is the meaning of "DA" on a precision approach?

A. The lowest altitude permitted during a circling maneuver

B. The altitude at which a decision to land or go missed is made

C. The fix where the final approach course is first intercepted

D. The altitude where the aircraft levels for the final segment

44. What does the "missed approach point" (MAP) define on an approach?

A. The fix where the final approach course is initially intercepted

B. The point where the missed approach procedure must be initiated

C. The altitude at which the aircraft levels for the circling maneuver

D. The position of the primary navaid serving the approach procedure

45. What is the function of an "initial approach fix" (IAF)?

A. The point where the final approach descent must always begin

B. The fix marking the missed approach holding pattern entry

C. The fix where an approach segment begins from the en route phase

D. The location of the primary navaid serving the approach

46. What does an "intermediate fix" (IF) mark on an approach procedure?

A. The point where the missed approach climb gradient begins

B. The location of the primary navaid serving the approach

C. The fix where the circling maneuver must be commenced

D. The transition between the initial and final approach segments

47. What does a "minimum vectoring altitude" provide during radar vectors?

A. The altitude above which radar contact is automatically assured

B. The lowest altitude at which a pilot may request a visual approach

C. The lowest altitude ATC may assign that ensures obstacle clearance

D. The altitude below which the transponder must report mode C data

48. What is the purpose of a "feeder route" on an approach chart?

A. To connect the en route structure to an initial approach fix

B. To define the final descent profile to the runway threshold

C. To establish the missed approach climb gradient requirement

D. To mark the circling protected area boundary for the airport

49. What does a depicted "procedure turn" altitude represent?

A. The altitude at which the final descent to the runway begins

B. The decision altitude for the precision approach to the runway

C. The minimum altitude to maintain while completing the course reversal

D. The highest altitude permitted during the missed approach climb

50. What is the purpose of the "minimum safe altitude" (MSA) circle?

A. To define the standard altitude for entering the holding pattern

B. To provide emergency obstacle clearance within a specified radius

C. To establish the minimum altitude for the entire en route airway

D. To mark the minimum airspeed required on the final approach

51. What does the term "circling approach" minimum permit a pilot to do?

A. Maneuver visually to land on a runway not aligned with the final course

B. Conduct a straight-in landing aligned with the final approach course

C. Descend below the decision height on a precision approach to land

D. Continue an approach with visibility below the published minimum

52. What is the significance of "MEA" on an IFR en route chart?

A. The minimum altitude ensuring navaid reception and obstacle clearance

B. The maximum altitude permitted before supplemental oxygen is required

C. The minimum airspeed allowed for aircraft flying that route segment

D. The maximum elevation of terrain located along the route segment

53. What does "MOCA" guarantee along an IFR route segment?

A. Continuous radar coverage from the controlling ATC facility

B. The maximum altitude before supplemental oxygen is required

C. Obstacle clearance, with navaid reception assured within 22 NM

D. The lowest altitude at which two-way communication is assured

54. What is the meaning of "MCA" at a fix on an airway?

A. The maximum altitude permitted when crossing the designated fix

B. The altitude at which radar service begins along the airway

C. The altitude reserved for holding at the designated intersection

D. The lowest altitude to cross a fix when proceeding toward higher terrain

55. What does "MRA" specify for an airway intersection?

A. The maximum altitude permitted before requiring a clearance

B. The altitude at which radar coverage is automatically assured

C. The highest altitude for receiving the intersection's signals

D. The lowest altitude at which the intersection can be received

56. What is the purpose of a "DME arc" on an instrument approach?

A. To transition the aircraft around a navaid at a constant distance

B. To provide vertical guidance during the final approach segment

C. To mark the missed approach holding pattern entry course

D. To define the circling protected area around the destination

57. What does a "compulsory reporting point" require in a non-radar environment?

A. A change to a new radio frequency upon reaching the point

B. A position report to be made upon reaching the designated point

C. A weather observation to be transmitted at the reporting point

D. A holding pattern to be entered at the designated reporting point

58. What is the function of a "STAR" in the IFR system?

A. A departure procedure routing aircraft away from the airport

B. A published instrument approach to a specific runway end

C. A holding pattern reserved for weather delays near the field

D. A standard arrival route transitioning toward the approach phase

59. What does a "SID" provide to a departing IFR aircraft?

A. A standardized departure routing from the airport to the en route structure

B. A standard arrival route transitioning toward the approach phase

C. A published instrument approach procedure to the departure runway

D. A holding pattern for sequencing aircraft after departure

60. What is the primary purpose of an "obstacle departure procedure" (ODP)?

A. To sequence arriving traffic onto the final approach course safely

B. To establish the holding pattern used during a missed approach

C. To provide obstacle clearance for aircraft departing the runway

D. To define the circling protected area around the destination field

+ Answer Key

1. C — VOR stations transmit in the very-high-frequency band between 108.0 and 117.95 MHz. This VHF range provides relatively interference-free signals. The frequency placement distinguishes VOR from low-frequency NDBs.

2. B — The primary VOR limitation is that its signal is line-of-sight, limited by range and altitude. Terrain and the earth's curvature can block reception at low altitude or long distance. GPS, by contrast, is not constrained by line-of-sight in the same way.

3. A — An NDB uses a low or medium frequency signal that is susceptible to terrain, precipitation static, and other interference. These errors can deflect the bearing indication. Pilots account for night effect, terrain effect, and weather when using NDBs.

4. A — NDB signals are navigated using the automatic direction finder, whose needle points toward the station. The ADF provides relative bearing to the NDB. The pilot interprets this against heading to track to or from the station.

5. B — Station passage inbound to a VOR is indicated by a reversal of the TO/FROM indication as the aircraft crosses overhead. The flag flips from TO to FROM at the station. This confirms the aircraft has passed the VOR.

6. C — Identifying a navaid by its Morse code confirms the correct station is tuned and operating normally. An absent or incorrect identifier means the station should not be used. This verification is required before IFR navigation by the navaid.

7. C — An efficient intercept angle is determined by the amount of course deviation and the desired closure rate. A larger deviation warrants a larger intercept angle. The pilot balances a quick intercept against overshooting the course.

8. B — A fly-by waypoint allows the turn to begin before the waypoint to smooth the course change. The aircraft anticipates the turn for a continuous path. This produces a smoother track than overflying the point.

9. A — A fly-over waypoint requires the aircraft to cross directly over the waypoint before turning. The turn is not anticipated. It is used where overflight is necessary, such as certain missed approach points.

10. C — A crosswind while tracking a VOR radial requires a wind correction angle to stay on the radial. The VOR does not correct for wind. The pilot crabs into the wind to hold the course.

11. D — The localizer provides lateral guidance aligning the aircraft with the runway centerline. It is the horizontal component of the ILS. Vertical guidance comes separately from the glide slope.

12. D — A localizer course is tailored so it is about 700 feet wide at the runway threshold, with the angular width adjusted to the runway length. This standardizes sensitivity near touchdown. The course narrows as the aircraft approaches the runway.

13. C — On a back-course localizer approach without an HSI, the course needle indications may be reversed, so the pilot must fly toward the needle's opposite sense or use reverse-sensing technique. An HSI with the front-course set corrects this. Awareness of reverse sensing prevents tracking errors.

14. B — DME displays slant-range distance in nautical miles to the tuned station. It measures the direct line-of-sight distance. The reading supports fixes, arcs, and groundspeed derivation.

15. D — DME distance is called slant range because it measures the direct line including the altitude difference between aircraft and station. Close and high, the slant range exceeds the ground distance. The error is greatest directly over the station.

16. B — A marker beacon provides position information at fixed points along the approach course. Each marker triggers a distinct light and tone. This gives the pilot a positive fix at known points.

17. B — The primary RNAV advantage is point-to-point routing without overflying ground stations. Routes are defined by waypoints rather than navaid locations. This allows more direct, efficient flight paths.

18. C — A teardrop course reversal reverses course to align the aircraft inbound on the final approach. It positions the aircraft for the final segment. It is flown within charted distance and altitude limits.

19. B — A standard holding pattern uses right turns with a one-minute inbound leg below 14,000 feet. Above that altitude the inbound leg is 1.5 minutes. Right turns are the default unless a left pattern is charted.

20. D — At 12,000 feet MSL the maximum holding airspeed is 230 knots indicated for that altitude band (the 6,001–14,000 band). Speed limits keep the aircraft within protected airspace. Different limits apply in other altitude bands.

21. C — A direct entry involves crossing the fix and turning to follow the pattern in its direction. It is used when the aircraft arrives within the direct-entry sector. It is the simplest of the three entry types.

22. A — Fixation is the scan error of focusing too long on one instrument, allowing other parameters to deviate unnoticed. It breaks the continuous cross-check. A disciplined scan prevents it.

23. C — Omission is the scan error of leaving an instrument out of the cross-check pattern entirely. The missing instrument's parameter can drift undetected. A complete scan includes all relevant instruments.

24. D — During straight-and-level instrument flight the attitude indicator is the primary reference, supported by the other instruments. It directly displays pitch and bank. The supporting instruments confirm and refine the picture.

25. B — Precession is a gyroscopic property where a reaction to an applied force is felt 90 degrees later in the direction of rotation. It produces drift in gyroscopic instruments. This characteristic underlies heading indicator drift over time.

26. D — The heading indicator must be reset to the magnetic compass periodically because its gyro precesses and drifts over time. The gyro has no inherent north reference. Resetting keeps the displayed heading accurate.

27. A — Magnetic dip is the pull of the compass card toward the magnetic poles, and its effect is greatest near the poles. It is the source of acceleration and turning errors. The card tilts as it aligns with the earth's field.

28. C — ANDS stands for Accelerate North, Decelerate South, describing the compass error on east-west headings during speed changes. Acceleration shows an apparent turn to north; deceleration shows south. It helps pilots anticipate the error.

29. D — Turning through north, the magnetic compass lags the actual heading, showing a turn slower than the real one (the UNOS/northerly turning error). The pilot rolls out before reaching the indicated heading. The lag is greatest near north.

30. A — The course deviation indicator shows the aircraft's position relative to a selected course. The needle indicates whether the course is left or right. Centering it confirms the aircraft is on course.

31. D — Full-scale CDI deflection on a VOR typically represents being 10 degrees or more off the selected course. Each dot corresponds to about two degrees. Beyond full scale, the aircraft is well off the radial.

32. B — The omni bearing selector selects the desired course to or from the VOR station. Rotating it sets the radial against which deviation is measured. It defines the course the CDI references.

33. A — A "TO" indication tells the pilot the selected course will take the aircraft toward the station. The flag indicates the station lies ahead on that course. Combined with a centered needle, it confirms tracking to the VOR.

34. A — An HSI integrates the heading indicator and the course deviation indicator into one display. This reduces scan workload and improves situational awareness. Heading and course information appear together.

35. D — An RMI shows bearing to the station against a rotating compass card, combining heading and bearing. The needle points directly at the station. This gives an intuitive picture of position relative to the navaid.

36. D — The cone of confusion is the area directly above a VOR where guidance becomes erratic. Signal geometry is unreliable in this zone. The CDI fluctuates briefly until the aircraft passes the cone.

37. B — A lead radial helps the pilot anticipate the point at which to begin a turn onto the next course. It provides advance warning so the turn starts in time. This improves the accuracy of course interception, especially on arcs.

38. A — Flying a DME arc with a wind requires adjusting the heading to maintain the arc distance against the drift. Small heading changes hold the constant radius. The wind would otherwise push the aircraft off the arc.

39. A — A step-down fix allows a lower minimum altitude after a charted obstacle is passed. It permits descent in stages along the final segment. Each segment's minimum protects against its obstacles.

40. B — A visual descent point is the point from which a normal descent to the runway may begin once visual references are acquired. Descending before it risks an unstable or premature approach. It promotes a stabilized descent path.

41. D — A precision approach provides vertical guidance via a glide slope to the touchdown zone, which a non-precision approach lacks. The glide path defines a three-dimensional path to the runway. This allows lower minimums.

42. C — MDA is the lowest altitude permitted on a non-precision approach without the required visual references. It is a level-off floor, not a point of continued descent. Descent below it requires seeing the runway environment.

43. B — DA is the altitude on a precision approach at which a decision to land or go missed is made. The decision depends on having the required visual references. It applies to approaches with vertical guidance.

44. B — The missed approach point defines where the missed approach procedure must be initiated if the runway is not in sight. It marks the latest point to continue or go around. It may be defined by time, fix, or DME.

45. C — An initial approach fix is where an approach segment begins from the en route phase. It is the entry point into the approach structure. Multiple IAFs may serve a single approach.

46. D — An intermediate fix marks the transition between the initial and final approach segments. It positions the aircraft for the final descent. It bridges the two segments at the proper altitude and course.

47. C — A minimum vectoring altitude is the lowest altitude ATC may assign while vectoring that ensures obstacle clearance. It is a controller tool not published on charts. It guarantees terrain separation during radar vectors.

48. A — A feeder route connects the en route structure to an initial approach fix. It provides a charted transition with headings, distances, and altitudes. It bridges the airway system and the approach.

49. C — A procedure turn altitude is the minimum altitude to maintain while completing the course reversal. It ensures obstacle clearance during the maneuver. The pilot stays at or above it until established inbound.

50. B — The minimum safe altitude circle provides emergency obstacle clearance, typically 1,000 feet, within a specified radius. It is for emergency use, not routine navigation. It offers a quick safe-altitude reference.

51. A — A circling approach minimum permits maneuvering visually to land on a runway not aligned with the final approach course. It applies when a straight-in landing is impractical. Maneuvering must remain within the protected circling area.

52. A — MEA (Minimum Enroute Altitude) is the minimum altitude ensuring both navaid reception and obstacle clearance along a route segment. It is the lowest altitude meeting both requirements. Flying below it risks losing guidance or clearance.

53. C — MOCA guarantees obstacle clearance for the full segment but assured navaid reception only within 22 NM of the VOR. It permits lower altitudes than the MEA where signal coverage is limited. Beyond 22 NM, reception is not guaranteed.

54. D — MCA (Minimum Crossing Altitude) is the lowest altitude to cross a fix when proceeding toward higher terrain or a higher minimum altitude. It ensures the climb begins early enough for obstacle clearance. It is charted where a higher altitude is needed ahead.

55. D — MRA (Minimum Reception Altitude) is the lowest altitude at which an airway intersection can be received from the relevant navaids. It is published where signal coverage limits fix identification. Below it, the intersection may not be reliably received.

56. A — A DME arc transitions the aircraft around a navaid at a constant distance. It is flown as a series of short straight segments approximating the curve. It connects course segments on some approaches.

57. B — A compulsory reporting point requires a position report upon reaching the designated point in a non-radar environment. The reports maintain procedural separation. Solid symbols denote compulsory points.

58. D — A STAR (Standard Terminal Arrival Route) is a standard arrival route transitioning aircraft toward the approach phase. It simplifies arrival routings into busy terminal areas. It reduces radio congestion and controller workload.

59. A — A SID (Standard Instrument Departure) provides a standardized departure routing from the airport to the en route structure. It streamlines departures and reduces communication workload. It includes lateral routing and often altitude and speed restrictions.

60. C — An obstacle departure procedure provides obstacle clearance for aircraft departing the runway. It defines a path or climb gradient that keeps the aircraft clear of terrain. It is used when the standard climb may not guarantee clearance.