PRACTICE EXAM 10 SIMULATION

1. IFR Enroute Low Altitude Charts depict the airway structure from the surface up to but not including:

A. 14,500 feet MSL

B. 18,000 feet MSL

C. 24,000 feet MSL

D. 10,000 feet MSL

2. IFR Enroute High Altitude Charts depict the route structure at and above:

A. 14,500 feet MSL

B. 24,000 feet MSL

C. 18,000 feet MSL

D. FL230

3. Victor airways are low-altitude routes defined by:

A. VOR radials

B. GPS waypoints

C. NDB bearings

D. ILS courses

4. Jet routes are high-altitude routes defined by VORs and used from 18,000 feet up to:

A. FL450

B. FL600

C. FL350

D. FL180

5. T-routes and Q-routes differ from Victor and Jet routes in that they are based on:

A. NDB bearings

B. RNAV/GPS rather than ground NAVAIDs

C. Localizer courses

D. Marker beacons

6. The Minimum Enroute Altitude (MEA) guarantees:

A. Obstacle clearance only

B. Navigation signal coverage only

C. Radar coverage for the segment

D. Both obstacle clearance and acceptable navigation signal for the entire segment

7. The Minimum Obstruction Clearance Altitude (MOCA) guarantees obstacle clearance for the whole segment but navigation signal only within:

A. 12 nautical miles of the VOR

B. 22 nautical miles of the VOR

C. 40 nautical miles of the VOR

D. 4 nautical miles of the course

8. On an enroute chart, the MOCA is typically marked with a(n):

A. Underline

B. Box

C. Asterisk

D. Circle

9. The Minimum Reception Altitude (MRA) is the lowest altitude at which:

A. Obstacle clearance is assured

B. Radar contact is guaranteed

C. The aircraft may cross a fix

D. An intersection can be reliably received

10. The Minimum Crossing Altitude (MCA) is the minimum altitude at which a fix must be crossed when proceeding to a:

A. Lower MEA

B. Holding pattern

C. Changeover point

D. Higher MEA on the next segment

11. The Maximum Authorized Altitude (MAA) represents the:

A. Lowest usable altitude

B. Highest altitude usable for the segment due to signal overlap limits

C. Altitude for crossing a fix

D. Off-route obstruction clearance altitude

12. The Off-Route Obstruction Clearance Altitude (OROCA) provides obstruction clearance for:

A. Airway segments only

B. Off-airway/off-route flight within a grid quadrant

C. Approach procedures only

D. Departure procedures only

13. A changeover point (COP) on an airway between two VORs indicates where the pilot should:

A. Switch navigation from the station behind to the station ahead

B. Begin a descent

C. Reverse course

D. Report position to ATC

14. When no changeover point is charted between two VORs, the changeover occurs at the:

A. First VOR

B. Second VOR

C. Midpoint of the segment

D. Nearest intersection

15. The IFR cruising altitude rule of 14 CFR 91.179 is based on the aircraft's:

A. True heading

B. Indicated heading

C. Magnetic course

D. Ground track only

16. An aircraft on a magnetic course of 045 degrees operating IFR below 18,000 feet, where ATC has not assigned an altitude, should fly:

A. Odd thousands of feet MSL

B. Even thousands of feet MSL

C. Odd thousands plus 500 feet

D. Even thousands plus 500 feet

17. An aircraft on a magnetic course of 225 degrees operating IFR below 18,000 feet should fly:

A. Even thousands of feet MSL

B. Odd thousands of feet MSL

C. Even thousands plus 500 feet

D. Odd thousands plus 500 feet

18. Compared with the VFR cruising altitude rule, the IFR rule:

A. Adds 1,000 feet

B. Does not add the 500 feet that VFR requires

C. Uses true course instead of magnetic

D. Applies only above 18,000 feet

19. A clearance to "descend pilot's discretion to 6,000" authorizes the pilot to:

A. Begin the descent when desired and descend at any rate to 6,000

B. Descend immediately at maximum rate only

C. Maintain altitude until the next fix

D. Descend below 6,000 if traffic permits

20. A clearance to "cross DENZL at and maintain 8,000" requires the pilot to:

A. Descend at pilot's discretion any time before DENZL

B. Cross DENZL at any altitude, then descend

C. Maintain present altitude past DENZL

D. Be level at 8,000 by the time the aircraft reaches DENZL

21. Above 18,000 feet MSL, all aircraft set their altimeters to:

A. 29.92 inches of mercury

B. The nearest local setting

C. Field elevation pressure

D. The forecast sea-level pressure

22. Above 18,000 feet MSL, altitudes are expressed as:

A. Flight levels

B. Feet MSL with local setting

C. Height above ground level

D. Pressure altitude minus field elevation

23. The floor of Class A airspace, and the altitude at which the transition to flight levels and 29.92 occurs, is:

A. 14,500 feet MSL

B. 24,000 feet MSL

C. FL230

D. 18,000 feet MSL

24. A Victor airway is 8 nautical miles wide at its base, which means it extends:

A. 8 NM on each side of centerline

B. 4 NM either side of centerline

C. 2 NM either side of centerline

D. 10 NM either side of centerline

25. A Victor airway widens beyond a certain distance from the VOR. That distance is approximately:

A. 22 nautical miles

B. 40 nautical miles

C. 51 nautical miles

D. 100 nautical miles

26. A pilot navigating the enroute structure must comply with charted minimum altitudes and maintain the assigned altitude until:

A. Reaching the destination

B. Passing any intersection

C. Established in a hold

D. Cleared to climb or descend

27. A pilot crossing an intersection marked with an MCA must begin the required climb:

A. After passing the intersection

B. Before or at the intersection to meet the higher MEA ahead

C. Only when instructed by ATC

D. At the changeover point

28. The difference between the MEA and the MOCA is most directly tested by the fact that the MOCA assures navigation signal only:

A. Above 18,000 feet

B. On Victor airways only

C. Within radar coverage

D. Within 22 NM of the VOR

29. A pilot flying off-airway, direct via GPS, would reference which charted altitude for obstruction clearance?

A. MEA

B. MOCA

C. OROCA

D. MCA

30. An aircraft on a magnetic course of 360 degrees operating IFR below 18,000 feet should fly:

A. Even thousands of feet MSL

B. Even thousands plus 500 feet

C. Odd thousands plus 500 feet

D. Odd thousands of feet MSL

31. A "descend via" clearance associated with a STAR requires the pilot to:

A. Follow the published vertical profile and meet all crossing restrictions

B. Descend at maximum rate to the lowest altitude

C. Maintain altitude until a further clearance

D. Disregard published speed restrictions

32. The MEA differs from the MOCA in that the MEA additionally guarantees:

A. Radar coverage

B. A lower altitude

C. Navigation signal coverage for the entire segment

D. Freedom from turbulence

33. An aircraft assigned an altitude by ATC in controlled airspace must:

A. Choose any cruising altitude per 91.179

B. Maintain the assigned altitude precisely

C. Climb 500 feet above the assignment

D. Descend at pilot's discretion automatically

34. A pilot receives "maintain 7,000, expect 9,000 ten minutes after departure." The 9,000 figure is the:

A. Assigned altitude

B. Minimum enroute altitude

C. Expected altitude, relevant for lost communications

D. Maximum authorized altitude

35. Jet routes and Q-routes appear on which chart?

A. IFR enroute low altitude charts

B. Sectional charts

C. Approach plates

D. IFR enroute high altitude charts

36. A pilot on an airway segment with a charted MEA of 6,000 and a MOCA of 4,000, more than 22 NM from the VOR, should expect reliable navigation signal at:

A. 6,000 feet (the MEA)

B. 4,000 feet (the MOCA)

C. Any altitude above 4,000

D. Only at the VOR

37. The enroute phase begins after departure when ATC clears the aircraft along its route, which may consist of:

A. Airways, direct (RNAV) segments, and fixes

B. Only Victor airways

C. Only direct GPS routing

D. Only Jet routes

38. An aircraft cruising at FL230 has its altimeter set to:

A. The local altimeter setting

B. Field elevation pressure

C. 29.92 inches of mercury

D. The forecast pressure at destination

39. A pilot must report leaving an assigned altitude. This report is:

A. Required only when not in radar contact

B. Required only above 18,000 feet

C. Optional in radar contact

D. Required at all times

40. The lowest altitude that guarantees both obstacle clearance and navigation signal for an entire airway segment is the:

A. MOCA

B. MCA

C. MRA

D. MEA

41. A Victor airway designation such as "V23" is depicted on the chart in which color convention?

A. Magenta

B. Blue

C. Green

D. Red

42. A pilot flying a segment where the MEA increases ahead must climb to the higher MEA, beginning the climb in accordance with any charted:

A. Changeover point

B. Minimum Crossing Altitude (MCA)

C. Maximum Authorized Altitude

D. Off-route altitude

43. A clearance for "pilot's discretion" descent allows the pilot to:

A. Descend below the assigned altitude

B. Descend only at a fixed rate

C. Choose when to begin and the rate of descent to the assigned altitude

D. Ignore the assigned altitude entirely

44. The transition altitude in the United States, below which the local altimeter setting is used, is:

A. 14,500 feet MSL

B. 24,000 feet MSL

C. 18,000 feet MSL

D. FL180 plus 1,000 feet

45. An aircraft on a magnetic course of 100 degrees operating IFR below 18,000 feet should fly:

A. Odd thousands of feet MSL

B. Even thousands of feet MSL

C. Odd thousands plus 500 feet

D. Even thousands plus 500 feet

46. A pilot needs the lowest altitude at which a particular intersection, formed by two VOR radials, can be reliably received. This is the:

A. MEA

B. MRA

C. MOCA

D. OROCA

47. T-routes are low-altitude RNAV routes that, unlike Victor airways, do not require:

A. A transponder

B. An IFR clearance

C. Ground-based NAVAIDs

D. A current altimeter setting

48. A pilot crossing a fix is issued "cross ABCDE at or above 5,000." The pilot must:

A. Be at or above 5,000 feet when reaching ABCDE

B. Be exactly at 5,000 at ABCDE

C. Descend below 5,000 before ABCDE

D. Maintain present altitude past ABCDE

49. The OROCA is most useful to a pilot who is:

A. Established on a Victor airway

B. Flying off-route or direct and needs terrain clearance in a grid quadrant

C. On a precision approach

D. Holding at a fix

50. An aircraft climbing through 18,000 feet MSL must change its altimeter setting from the local setting to:

A. Field elevation pressure

B. The destination forecast

C. 29.92 inches of mercury

D. The nearest station's setting

51. A pilot on a magnetic course of 270 degrees below 18,000 feet, where ATC has not assigned an altitude, should fly:

A. Even thousands of feet MSL

B. Odd thousands of feet MSL

C. Odd thousands plus 500 feet

D. Even thousands plus 500 feet

52. The charted altitude that protects against the loss of navigation signal beyond signal-overlap limits on a segment is the:

A. Maximum Authorized Altitude (MAA)

B. Minimum Enroute Altitude (MEA)

C. Minimum Crossing Altitude (MCA)

D. Minimum Reception Altitude (MRA)

53. A pilot is cleared "descend and maintain 5,000" without "pilot's discretion." The pilot should:

A. Descend at pilot's discretion when ready

B. Maintain present altitude until a fix

C. Begin the descent promptly at a normal rate to 5,000

D. Descend below 5,000 if able

54. The enroute charted altitude family includes MEA, MOCA, MRA, MCA, MAA, and:

A. DA

B. MDA

C. TCH

D. OROCA

55. A pilot flying a Jet route at FL350 is operating in which airspace?

A. Class E

B. Class A

C. Class G

D. Class D

56. A pilot wishing to fly a more direct route than the published airways, where equipment and clearance allow, may use:

A. NDB bearings

B. Marker beacons

C. RNAV/GPS direct routing

D. Localizer back courses

57. A pilot must maintain a crossing restriction "cross WAVES at and maintain 10,000" exactly because:

A. It is advisory only

B. It applies only in VFR

C. ATC will issue a new clearance at WAVES

D. The restriction fixes both the altitude and the point

58. An aircraft assigned a "descend via" STAR clearance must comply with the arrival's published:

A. Holding pattern only

B. Frequency changes only

C. Missed approach

D. Altitude and speed restrictions

59. A pilot on a westerly magnetic course (180–359 degrees) below 18,000 feet flies even thousands of feet MSL because the rule is:

A. East-odd, west-odd

B. East-odd, west-even

C. East-even, west-odd

D. East-even, west-even

60. The fundamental reason the enroute structure publishes minimum altitudes such as the MEA and MOCA is to ensure:

A. Maximum fuel efficiency

B. The shortest possible route

C. Reduced radio congestion

D. Obstacle clearance and adequate navigation signal coverage

Answer Key

1. B — IFR Enroute Low Altitude Charts depict the airway structure from the surface up to but not including 18,000 feet MSL. The high altitude charts cover 18,000 feet and above.

2. C — IFR Enroute High Altitude Charts depict the route structure at and above 18,000 feet MSL, the floor of Class A airspace. This is where Jet routes and Q-routes appear.

3. A — Victor airways are low-altitude routes defined by VOR radials. RNAV-based low routes, by contrast, are T-routes.

4. A — Jet routes are high-altitude VOR-based routes used from 18,000 feet up to FL450. Above that, the structure transitions to other routings.

5. B — T-routes and Q-routes are based on RNAV/GPS rather than ground NAVAIDs. This allows routing independent of VOR locations.

6. D — The MEA guarantees both obstacle clearance and acceptable navigation signal for the entire segment. This dual guarantee distinguishes it from the MOCA.

7. B — The MOCA guarantees obstacle clearance for the whole segment but navigation signal only within 22 nautical miles of the VOR. This 22-NM caveat is the key distinction from the MEA.

8. C — The MOCA is typically marked with an asterisk on enroute charts. The asterisk flags the limited navigation-signal coverage.

9. D — The MRA is the lowest altitude at which an intersection can be reliably received. It ensures the navigation signals defining the fix are usable.

10. D — The MCA is the minimum altitude at which a fix must be crossed when proceeding to a higher MEA on the next segment. It requires the pilot to begin climbing before the fix.

11. B — The MAA is the highest altitude usable for the segment due to signal-overlap limits. Above it, navigation signals may interfere.

12. B — OROCA provides obstruction clearance for off-airway/off-route flight within a grid quadrant. It is used when not on a published airway.

13. A — A changeover point indicates where the pilot should switch navigation from the station behind to the station ahead. It accounts for signal coverage along the segment.

14. C — When no changeover point is charted between two VORs, the changeover occurs at the midpoint. The midpoint is the default.

15. C — The IFR cruising altitude rule under 91.179 is based on magnetic course, not heading or track. East-odd, west-even is determined by the course flown.

16. A — A magnetic course of 045 degrees is easterly (000–179), so the IFR cruising altitude is odd thousands of feet MSL. IFR does not add the 500 feet that VFR requires.

17. A — A magnetic course of 225 degrees is westerly (180–359), so the IFR cruising altitude is even thousands of feet MSL. The west-even rule applies.

18. B — Compared with the VFR rule, the IFR rule does not add the 500 feet; IFR uses whole odd or even thousands. The east-odd, west-even basis is otherwise the same.

19. A — A pilot's-discretion descent lets the pilot begin the descent when desired and descend at any rate to the assigned altitude. It does not authorize descending below the assigned altitude.

20. D — "Cross DENZL at and maintain 8,000" requires the aircraft to be level at 8,000 by the time it reaches DENZL. The crossing restriction fixes both the altitude and the point.

21. A — Above 18,000 feet MSL, all aircraft set their altimeters to the standard 29.92 inches of mercury. Below that, the local setting is used.

22. A — Above 18,000 feet MSL, altitudes are expressed as flight levels. This corresponds to the standard 29.92 altimeter setting.

23. D — The floor of Class A airspace is 18,000 feet MSL, where the transition to flight levels and 29.92 occurs. Below it, local altimeter settings and feet MSL apply.

24. B — A Victor airway 8 NM wide extends 4 NM either side of the centerline. It widens beyond 51 NM from the VOR.

25. C — A Victor airway widens beyond approximately 51 nautical miles from the VOR. Within that distance it is 8 NM wide at the base.

26. D — A pilot maintains the assigned altitude until cleared to climb or descend. The assignment governs until ATC amends it.

27. B — An MCA requires the pilot to begin the required climb before or at the intersection to meet the higher MEA ahead. Climbing only after the fix would not satisfy the crossing requirement.

28. D — The MOCA assures navigation signal only within 22 NM of the VOR, the most-tested distinction from the MEA. Beyond 22 NM the signal is not guaranteed at the MOCA.

29. C — Flying off-airway direct via GPS, the pilot references OROCA for obstruction clearance within the grid quadrant. The MEA and MOCA apply to airway segments.

30. D — A magnetic course of 360 degrees is easterly (treated as 000–179), so the IFR cruising altitude is odd thousands of feet MSL. The east-odd rule applies.

31. A — A "descend via" clearance requires the pilot to follow the published vertical profile and meet all crossing restrictions. It is not a descent at will.

32. C — The MEA additionally guarantees navigation signal coverage for the entire segment, which the MOCA does not beyond 22 NM. Both guarantee obstacle clearance.

33. B — An aircraft assigned an altitude by ATC must maintain it precisely. The pilot does not freely choose a 91.179 altitude when ATC has assigned one.

34. C — "Expect 9,000 ten minutes after departure" is the expected altitude, relevant for lost communications. It feeds the highest-of-three altitude rule under 91.185.

35. D — Jet routes and Q-routes appear on IFR enroute high altitude charts. Victor and T routes appear on the low altitude charts.

36. A — More than 22 NM from the VOR, reliable navigation signal is assured only at the MEA (6,000), not at the MOCA (4,000). The MOCA's signal guarantee does not extend beyond 22 NM.

37. A — The enroute phase route may consist of airways, direct (RNAV) segments, and fixes. It is not limited to a single route type.

38. C — At FL230 (above 18,000 feet), the altimeter is set to 29.92 inches of mercury. Flight levels use the standard setting.

39. D — Leaving an assigned altitude is a report required at all times under 91.183. It applies even in radar contact.

40. D — The MEA is the lowest altitude that guarantees both obstacle clearance and navigation signal for an entire segment. The MOCA guarantees signal only within 22 NM.

41. B — Victor airways such as "V23" are depicted in blue on enroute charts. The blue airway lines are a standard charting convention.

42. B — Where the MEA increases ahead, the pilot climbs in accordance with any charted Minimum Crossing Altitude (MCA). The MCA dictates beginning the climb before the fix.

43. C — A pilot's-discretion descent allows the pilot to choose when to begin and the rate of descent to the assigned altitude. It does not authorize descending below that altitude.

44. C — The transition altitude in the United States is 18,000 feet MSL; below it the local altimeter setting is used. At and above it, 29.92 and flight levels apply.

45. A — A magnetic course of 100 degrees is easterly (000–179), so the IFR cruising altitude is odd thousands of feet MSL. The east-odd rule applies.

46. B — The lowest altitude at which an intersection formed by two VOR radials can be reliably received is the MRA. It ensures the defining signals are usable.

47. C — T-routes are RNAV routes that do not require ground-based NAVAIDs, unlike Victor airways. They rely on GPS/RNAV.

48. A — "Cross ABCDE at or above 5,000" requires the aircraft to be at or above 5,000 feet when reaching ABCDE. It sets a floor, not an exact altitude.

49. B — OROCA is most useful to a pilot flying off-route or direct who needs terrain clearance within a grid quadrant. It is not tied to a specific airway.

50. C — Climbing through 18,000 feet MSL, the pilot changes the altimeter setting from local to 29.92 inches of mercury. This marks the transition to flight levels.

51. A — A magnetic course of 270 degrees is westerly (180–359), so the IFR cruising altitude is even thousands of feet MSL. The west-even rule applies.

52. A — The Maximum Authorized Altitude (MAA) protects against loss of navigation signal beyond signal-overlap limits on a segment. Above it, signals may interfere.

53. C — A clearance to "descend and maintain 5,000" without "pilot's discretion" requires the pilot to begin the descent promptly at a normal rate. It is not a pilot's-discretion descent.

54. D — The enroute charted altitude family includes MEA, MOCA, MRA, MCA, MAA, and OROCA. DA, MDA, and TCH are approach-related values, not enroute altitudes.

55. B — A Jet route at FL350 is in Class A airspace, which extends from 18,000 feet MSL to FL600. All flight there is IFR.

56. C — A pilot wishing to fly more directly, where equipment and clearance allow, may use RNAV/GPS direct routing. This bypasses the published airway structure.

57. D — "Cross WAVES at and maintain 10,000" must be met exactly because the restriction fixes both the altitude and the point. The pilot must be level at 10,000 by WAVES.

58. D — A "descend via" STAR clearance requires compliance with the arrival's published altitude and speed restrictions. It is not limited to frequency changes or the missed approach.

59. B — A westerly magnetic course flies even thousands because the rule is east-odd, west-even. Easterly courses (000–179) use odd thousands; westerly courses (180–359) use even.

60. D — The enroute structure publishes minimum altitudes such as the MEA and MOCA to ensure obstacle clearance and adequate navigation signal coverage. Terrain and signal protection are the purpose.