PRACTICE EXAM 21 SIMULATION

1. The universally taught priority of actions in any in-flight emergency is:

A. Communicate, navigate, aviate

B. Navigate, aviate, communicate

C. Aviate, navigate, communicate

D. Communicate, aviate, navigate

2. The first priority, "aviate," means the pilot must first:

A. Call ATC

B. Select a navigation frequency

C. Squawk an emergency code

D. Maintain control of the aircraft

3. A vacuum (or gyro) system failure in a traditional panel primarily affects the:

A. Altimeter and airspeed indicator

B. Turn coordinator only

C. Magnetic compass

D. Attitude indicator and heading indicator

4. Following a vacuum failure, the pilot maintains bank control by reference to the:

A. Failed attitude indicator

B. Failed heading indicator

C. Turn coordinator

D. Vertical speed indicator

5. Following a vacuum failure, the pilot controls pitch primarily by reference to the:

A. Attitude indicator

B. Magnetic compass

C. Altimeter and vertical speed indicator

D. Turn coordinator

6. A complete electrical failure in a traditional-panel aircraft would disable the:

A. Vacuum-driven attitude indicator

B. Pitot-static instruments

C. Magnetic compass

D. Electrically powered turn coordinator and radios

7. After an electrical failure, the vacuum-driven attitude indicator and heading indicator:

A. Both fail immediately

B. Become reverse-sensing

C. Are unusable

D. Generally remain usable, since they are vacuum-driven

8. A pitot tube blockage with the drain hole open causes the airspeed indicator to:

A. Drop toward zero

B. Read high in a climb

C. Freeze at the current value

D. Behave like an altimeter

9. A pitot tube blockage with both the ram inlet and drain hole blocked causes the airspeed indicator to:

A. Drop to zero

B. Behave like an altimeter, reading higher in a climb

C. Read correctly

D. Freeze and not change

10. A blocked static port causes the altimeter to:

A. Read correctly

B. Freeze at the altitude where the blockage occurred

C. Read continuously increasing

D. Drop to zero

11. With a blocked static port, the pilot can restore approximate static pressure by using the:

A. Alternate static source

B. Pitot heat

C. Vacuum pump

D. Transponder

12. Using the alternate static source, which vents to the cabin, typically causes the altimeter to read:

A. Lower than actual

B. Exactly correct

C. Slightly higher than actual

D. Zero

13. Pitot heat is used to prevent:

A. Vacuum failure

B. Electrical failure

C. Static port blockage

D. Pitot tube icing that would block the airspeed indicator

14. An alternator or generator failure is first indicated by:

A. A drop in oil pressure

B. A rise in airspeed

C. A discharging ammeter or low-voltage warning

D. A vacuum gauge change

15. After an alternator failure, the aircraft runs on battery power, so the pilot should:

A. Increase all electrical loads

B. Shed nonessential electrical loads to conserve the battery

C. Turn off the battery

D. Continue at full electrical load

16. A partial-panel approach after a vacuum failure is flown using the:

A. Failed attitude indicator

B. Magnetic compass for pitch

C. GPS for attitude

D. Turn coordinator, altimeter, airspeed, and VSI

17. An engine failure in IMC requires the pilot to first:

A. Establish best glide speed and maintain control

B. Call ATC immediately

C. Squawk 7700 before anything else

D. Restart checklist before flying

18. During an emergency descent, the pilot configures the aircraft to:

A. Climb

B. Maintain altitude

C. Increase airspeed beyond limits

D. Descend rapidly while remaining within structural and airspeed limits

19. The emergency transponder code for a general emergency is:

A. 7600

B. 7700

C. 7500

D. 1200

20. The transponder code 7600 indicates:

A. Lost communications (radio failure)

B. A general emergency

C. Unlawful interference (hijack)

D. VFR

21. The transponder code 7500 indicates:

A. Unlawful interference (hijack)

B. Lost communications

C. A general emergency

D. VFR

22. A pilot experiencing a complete communication failure under IFR should squawk 7600 and then follow the lost-communication procedures of:

A. 91.205

B. 91.175

C. 91.167

D. 91.185

23. Under 91.185, if the failure occurs in VFR conditions, the pilot should:

A. Continue VFR and land as soon as practicable

B. Climb to the MEA

C. Hold at the next fix

D. Squawk 1200

24. Under 91.185, the route to fly after lost communications in IMC is, in order of priority: the route assigned, then if none, the route vectored, then expected, then:

A. The most direct route

B. The route filed in the flight plan

C. Any route the pilot chooses

D. A return to departure

25. Under 91.185, the altitude to fly is the highest of the assigned altitude, the minimum IFR altitude, or the:

A. Lowest MEA

B. Expected altitude

C. Cruise filed altitude

D. Pattern altitude

26. A pilot recognizing a slowly failing vacuum-driven attitude indicator should:

A. Cross-check it against the turn coordinator and pitot-static instruments and disregard it if it disagrees

B. Continue to trust it

C. Rely on bodily sensation

D. Cover the turn coordinator

27. A common technique when an attitude indicator fails is to:

A. Cover it to prevent fixation on false information

B. Tap it repeatedly while flying

C. Use it for pitch only

D. Use it for bank only

28. An engine fire in flight requires the pilot to, among other actions:

A. Increase the mixture

B. Follow the emergency checklist, typically cutting fuel and establishing a descent/landing

C. Climb to altitude

D. Continue normally

29. A pilot who loses the primary flight display in a glass cockpit reverts to the:

A. Standby instruments (attitude, airspeed, altitude) and magnetic compass

B. Failed PFD

C. GPS map only

D. Engine instruments

30. A pilot in a glass cockpit experiencing an AHRS failure loses:

A. Airspeed and altitude

B. Engine data

C. Fuel quantity

D. Attitude and heading information

31. A pilot in a glass cockpit experiencing an ADC (air data computer) failure loses:

A. Attitude and heading

B. Airspeed, altitude, and vertical speed

C. Engine RPM

D. Fuel flow

32. A pilot must brief and be prepared for emergencies because, in IMC, a failure leaves:

A. Plenty of time and outside references

B. No outside visual reference, raising the importance of instruments and procedures

C. The autopilot fully capable always

D. No need for checklists

33. During an electrical failure, to conserve the battery for the approach, the pilot may temporarily:

A. Turn on all lights

B. Increase radio transmissions

C. Run the pitot heat continuously

D. Turn off nonessential equipment and use it only when needed

34. A pilot who experiences a static system blockage and lacks an alternate static source in an unpressurized aircraft may, as a last resort:

A. Use the vacuum pump

B. Turn on pitot heat

C. Disable the transponder

D. Break the glass of the VSI to admit cabin static pressure

35. When the airspeed indicator is unreliable due to a pitot blockage, the pilot can estimate airspeed using:

A. The magnetic compass

B. Known pitch and power settings

C. The transponder

D. The DME

36. A pilot encountering severe airframe icing should:

A. Increase the angle of attack

B. Continue without action

C. Exit the icing conditions and consider declaring an emergency if performance degrades

D. Reduce power to idle

37. The proper response to an inadvertent encounter with a thunderstorm or severe turbulence is to:

A. Increase speed above V_A

B. Make steep turns

C. Maintain attitude, slow to maneuvering speed, and avoid abrupt control inputs

D. Descend at maximum speed

38. A pilot who has declared an emergency by squawking 7700:

A. Receives priority handling from ATC

B. Must cancel IFR

C. Loses ATC services

D. Must land immediately at the nearest field regardless

39. A partial vacuum failure may be insidious because the attitude indicator can:

A. Fail instantly and obviously

B. Become reverse-sensing

C. Always lock in place

D. Slowly sag or roll off, presenting a plausible but wrong attitude

40. The phrase "no gyro" approach refers to one flown with:

A. Full instrument capability

B. The autopilot engaged

C. A failed transponder

D. A failed heading indicator and/or attitude indicator, using timed/standard-rate turns and ATC headings

41. A pilot experiencing a vacuum failure at night in IMC should prioritize:

A. Calling family

B. Restarting the engine

C. Maintaining control on the turn coordinator and pitot-static instruments

D. Turning off the radios

42. The reason "aviate" comes first in an emergency is that:

A. Loss of aircraft control is the most immediate threat to survival

B. ATC must be notified first

C. Navigation is most important

D. The checklist requires it

43. During an emergency, "communicate" includes squawking the appropriate code and:

A. Filing a new flight plan

B. Changing the destination

C. Advising ATC of the situation and intentions when able

D. Turning off the transponder

44. A pilot who loses the alternator and depletes the battery will eventually lose:

A. The vacuum-driven gyros

B. The pitot-static instruments

C. The electrically powered systems, including radios and the turn coordinator

D. The magnetic compass

45. A pilot flying partial panel must avoid over-controlling, instead making:

A. Large, rapid corrections

B. Rudder-only inputs

C. No corrections

D. Small, smooth corrections evaluated on the supporting instruments

46. A pilot experiencing smoke or fire in the cockpit should, among immediate actions:

A. Continue the flight plan

B. Increase cabin heat

C. Climb to a higher altitude

D. Identify and isolate the source, ventilate, and prepare to land as soon as possible

47. The lost-communication procedures exist so that, even without radio contact, the pilot's actions are:

A. Random

B. Predictable to ATC, allowing safe separation

C. Unrestricted

D. VFR only

48. A pilot in IMC who loses communications and was assigned "expect 8,000 in 10 minutes" should, at the appropriate time, use:

A. The lowest MEA

B. The pattern altitude

C. The expected altitude as part of the highest-altitude determination

D. The filed altitude only

49. When to begin the descent for the approach after lost communications is governed by:

A. Pilot discretion alone

B. ATC only

C. The clearance limit and the EFC or ETA timing under 91.185

D. The transponder code

50. A pilot encountering a partial power loss should:

A. Immediately shut down the engine

B. Troubleshoot per the checklist while maintaining control and identifying a landing option

C. Ignore it

D. Climb at maximum power

51. The standby attitude indicator in a glass cockpit is valuable because it:

A. Shares the AHRS

B. Shares the ADC

C. Operates on independent power and sensors

D. Requires the PFD to function

52. A pilot experiencing a runaway electric trim or autopilot malfunction should:

A. Allow it to continue

B. Increase autopilot authority

C. Disconnect the autopilot/trim and hand-fly

D. Reduce airspeed only

53. The aviate-navigate-communicate priority means that, when task-saturated in an emergency, the pilot first ensures the aircraft is:

A. Under control and on a safe flight path

B. On the correct frequency

C. Squawking the right code

D. Pointed at the nearest airport

54. A pilot losing the heading indicator (DG) in IMC can maintain heading using the:

A. GPS only

B. Magnetic compass, with timed turns for heading changes

C. Attitude indicator

D. Vertical speed indicator

55. A pilot must recognize that in a vacuum failure, the most dangerous outcome of trusting the failing attitude indicator is:

A. Entering an unusual attitude or spiral

B. A radio failure

C. A fuel leak

D. A transponder fault

56. A pilot experiencing an electrical fire should consider turning off the:

A. Master switch and electrical sources to remove power from the fire

B. Vacuum pump

C. Pitot heat only

D. Fuel pump only

57. The emergency descent procedure is used when the pilot must lose altitude quickly, such as for:

A. A routine descent

B. A normal approach

C. A cabin fire, depressurization, or medical emergency

D. Fuel conservation

58. A pilot who declares an emergency:

A. Faces automatic certificate action

B. Is afforded whatever assistance and priority is needed to handle the situation

C. Must always file a report

D. Loses radar service

59. A pilot flying a no-gyro approach is instructed by ATC to "turn left, stop turn," and complies using:

A. A steep bank

B. Standard-rate (or half-standard-rate on final) turns as directed

C. The failed heading indicator

D. The attitude indicator only

60. The fundamental principle underlying all instrument emergency procedures is to:

A. Maintain aircraft control first, then navigate and communicate, while working the problem

B. Communicate before controlling the aircraft

C. Navigate before maintaining control

D. Troubleshoot before flying the aircraft

Answer Key

1. C — The priority is aviate, navigate, communicate. Maintaining control comes before navigation or radio work.

2. D — "Aviate" means the pilot must first maintain control of the aircraft. Control is the immediate survival priority.

3. D — A vacuum failure in a traditional panel affects the attitude indicator and heading indicator. Both are vacuum-driven.

4. C — After a vacuum failure, bank control is by reference to the electrically driven turn coordinator. The vacuum gyros are unreliable.

5. C — After a vacuum failure, pitch is controlled by the altimeter and vertical speed indicator. These pitot-static instruments are unaffected.

6. D — A complete electrical failure disables the electrically powered turn coordinator and radios. The vacuum gyros and pitot-static instruments remain.

7. D — After an electrical failure, the vacuum-driven attitude and heading indicators generally remain usable. They are not electrically powered.

8. A — A pitot blockage with the drain open lets trapped pressure bleed out, so the airspeed indicator drops toward zero. Only with the drain also blocked does it behave like an altimeter.

9. B — With both the ram inlet and drain blocked, the airspeed indicator behaves like an altimeter, reading higher in a climb. The trapped pressure responds to altitude change.

10. B — A blocked static port freezes the altimeter at the altitude where the blockage occurred. It can no longer sense pressure change.

11. A — With a blocked static port, the pilot uses the alternate static source to restore approximate static pressure. It draws static pressure from another point, often the cabin.

12. C — The alternate static source, venting to the lower-pressure cabin, causes the altimeter to read slightly higher than actual. The pilot mentally corrects downward.

13. D — Pitot heat prevents pitot tube icing that would block the airspeed indicator. It keeps the ram-air inlet clear.

14. C — An alternator or generator failure is first indicated by a discharging ammeter or a low-voltage warning. The electrical system is no longer being charged.

15. B — After an alternator failure, the pilot sheds nonessential electrical loads to conserve the battery. This extends the available battery time.

16. D — A partial-panel approach after a vacuum failure uses the turn coordinator, altimeter, airspeed, and VSI. The failed vacuum gyros are not used.

17. A — An engine failure in IMC requires first establishing best glide speed and maintaining control. Aviate comes before communicating or running checklists.

18. D — During an emergency descent, the pilot descends rapidly while remaining within structural and airspeed limits. The descent must not exceed the aircraft's limitations.

19. B — The emergency transponder code for a general emergency is 7700. It alerts ATC to the emergency.

20. A — Transponder code 7600 indicates lost communications (radio failure). It tells ATC the aircraft has a radio problem.

21. A — Transponder code 7500 indicates unlawful interference (hijack). It is the hijack code.

22. D — A communication failure under IFR calls for squawking 7600 and following the lost-communication procedures of 91.185. That regulation governs the route and altitude to fly.

23. A — Under 91.185, if the failure occurs in VFR conditions (or VFR is encountered), the pilot continues VFR and lands as soon as practicable. VFR conditions take priority.

24. B — Under 91.185, the route priority is assigned, vectored, expected, then the route filed in the flight plan. "AVEF" captures the order: Assigned, Vectored, Expected, Filed.

25. B — Under 91.185, the altitude is the highest of the assigned altitude, the minimum IFR altitude, or the expected altitude. "MEA" here is the highest-of-three rule.

26. A — A slowly failing attitude indicator should be cross-checked against the turn coordinator and pitot-static instruments and disregarded if it disagrees. Continuing to trust it risks a spiral.

27. A — A common technique when the attitude indicator fails is to cover it to prevent fixation on false information. Covering it removes the misleading display.

28. B — An engine fire requires following the emergency checklist, typically cutting fuel and establishing a descent/landing. Starving the fire and getting down is the priority.

29. A — Losing the PFD in a glass cockpit, the pilot reverts to the standby instruments and magnetic compass. These provide independent attitude, airspeed, altitude, and heading.

30. D — An AHRS failure removes attitude and heading information. Airspeed and altitude, from the ADC, remain.

31. B — An ADC failure removes airspeed, altitude, and vertical speed. Attitude and heading, from the AHRS, remain.

32. B — In IMC, a failure leaves no outside visual reference, raising the importance of instruments and procedures. The pilot must rely on the instruments and trained responses.

33. D — To conserve the battery, the pilot turns off nonessential equipment and uses it only when needed. This preserves power for the approach.

34. D — As a last resort with no alternate static source in an unpressurized aircraft, the pilot may break the glass of the VSI to admit cabin static pressure. This restores approximate static input to the other instruments.

35. B — With an unreliable airspeed indicator, the pilot estimates airspeed using known pitch and power settings. Pitch-plus-power yields a predictable performance.

36. C — Encountering severe airframe icing, the pilot should exit the icing conditions and consider declaring an emergency if performance degrades. Removing the aircraft from icing is the priority.

37. C — Inadvertently entering a thunderstorm or severe turbulence, the pilot maintains attitude, slows to maneuvering speed, and avoids abrupt control inputs. This minimizes structural stress.

38. A — Squawking 7700 gives the pilot priority handling from ATC. The emergency declaration mobilizes assistance.

39. D — A partial vacuum failure is insidious because the attitude indicator can slowly sag or roll off, presenting a plausible but wrong attitude. The gradual error can mislead the pilot.

40. D — A "no gyro" approach is flown with a failed heading and/or attitude indicator, using timed or standard-rate turns and ATC headings. ATC issues turn instructions the pilot follows.

41. C — A vacuum failure at night in IMC requires prioritizing aircraft control on the turn coordinator and pitot-static instruments. Control comes first.

42. A — "Aviate" comes first because loss of aircraft control is the most immediate threat to survival. Nothing else matters if control is lost.

43. C — "Communicate" includes squawking the appropriate code and advising ATC of the situation and intentions when able. Communication follows control and navigation.

44. C — A depleted battery after an alternator failure eventually loses the electrically powered systems, including radios and the turn coordinator. The vacuum gyros and compass remain.

45. D — Partial-panel flying requires small, smooth corrections evaluated on the supporting instruments. Over-controlling leads to unusual attitudes.

46. D — Smoke or fire in the cockpit requires identifying and isolating the source, ventilating, and preparing to land as soon as possible. Removing the hazard and landing is the priority.

47. B — Lost-communication procedures make the pilot's actions predictable to ATC, allowing safe separation. Predictability is the purpose of 91.185.

48. C — After lost communications, an "expect 8,000 in 10 minutes" altitude is used as part of the highest-altitude determination. It feeds the highest-of-three rule.

49. C — When to begin the descent after lost communications is governed by the clearance limit and the EFC or ETA timing under 91.185. The timing determines when to leave the fix.

50. B — A partial power loss calls for troubleshooting per the checklist while maintaining control and identifying a landing option. Control and a landing plan come first.

51. C — The standby attitude indicator is valuable because it operates on independent power and sensors. This independence keeps it working if the primary systems fail.

52. C — A runaway electric trim or autopilot malfunction requires disconnecting the autopilot/trim and hand-flying. Removing the malfunctioning automation restores control.

53. A — The aviate-navigate-communicate priority means the pilot first ensures the aircraft is under control and on a safe flight path. Control is the foundation.

54. B — Losing the heading indicator in IMC, the pilot maintains heading using the magnetic compass, with timed turns for heading changes. The compass is the backup heading reference.

55. A — The most dangerous outcome of trusting a failing attitude indicator is entering an unusual attitude or spiral. The false indication can lead the pilot into loss of control.

56. A — An electrical fire calls for turning off the master switch and electrical sources to remove power from the fire. Cutting power can extinguish an electrical fire.

57. C — The emergency descent is used to lose altitude quickly for a cabin fire, depressurization, or medical emergency. It is not a routine descent.

58. B — A pilot who declares an emergency is afforded whatever assistance and priority is needed. The declaration mobilizes ATC support.

59. B — On a no-gyro approach, the pilot complies with "turn left, stop turn" using standard-rate (or half-standard-rate on final) turns as directed. ATC provides the turn instructions.

60. A — The fundamental principle of instrument emergency procedures is to maintain aircraft control first, then navigate and communicate, while working the problem. Aviate-navigate-communicate governs every emergency.