PRACTICE EXAM 14 SIMULATION

1. What atmospheric condition is the primary cause of radiation fog forming overnight?

A. Warm moist air flowing horizontally over a colder land surface

B. Rapid lifting of moist air along a steep mountain slope

C. Mixing of two air masses with widely different temperatures

D. Terrestrial cooling of the ground that chills the air above it

2. During which stage of a thunderstorm are the most severe downdrafts and wind shear present?

A. The cumulus stage when updrafts dominate the cell's growth

B. The mature stage when both updrafts and downdrafts coexist

C. The dissipating stage as the cell loses its energy supply

D. The towering stage before any precipitation begins to fall

3. A pilot experiences hypoxia at altitude. Which type results from a reduced partial pressure of oxygen at high altitude?

A. Histotoxic hypoxia caused by alcohol or drugs in the bloodstream

B. Hypoxic hypoxia from insufficient oxygen pressure in the air

C. Stagnant hypoxia from poor circulation reducing blood flow

D. Hypemic hypoxia from carbon monoxide binding to hemoglobin

4. What does a cold front typically produce as it advances?

A. A narrow band of intense weather with rapid clearing behind it

B. A wide region of steady precipitation lasting many hours

C. Gradually improving visibility ahead of the frontal boundary

D. Stable stratiform clouds with no associated turbulence at all

5. A pilot reviews an enroute chart and sees a navaid symbol with a small box showing frequencies. What does the box typically contain?

A. The published minimum enroute altitude for the airway segment

B. The maximum authorized speed permitted along the route

C. The navaid identifier, frequency, and Morse code information

D. The distance in nautical miles to the next charted intersection

6. What visual illusion can a wide runway create during an instrument-to-visual transition?

A. A sensation that the aircraft is yawing slightly to the right

B. An impression that the aircraft is lower than its actual height

C. A false perception of being too fast on the final approach

D. An impression that the aircraft is higher than its actual height

7. Which cloud type is most commonly associated with severe clear icing?

A. Thin cirrus clouds composed entirely of ice crystals at altitude

B. Cumuliform clouds containing large supercooled water droplets

C. Stratus clouds producing only very light rime ice accumulation

D. High altocirrus layers that rarely contain any liquid moisture

8. A pilot suspects the onset of spatial disorientation. Which physiological system is primarily responsible for these false sensations?

A. The visual system processing the outside horizon reference

B. The respiratory system regulating oxygen and carbon dioxide

C. The vestibular system in the inner ear sensing motion and balance

D. The cardiovascular system controlling blood pressure changes

9. What weather phenomenon is indicated by the term "wind shear"?

A. A steady increase in wind speed with increasing altitude only

B. A constant crosswind component along the final approach course

C. A gradual veering of wind direction over a long distance

D. A sudden change in wind speed or direction over a short distance

10. A METAR includes "FZRA" in the present weather group. What does this indicate?

A. A forecast of reduced visibility expected later in the period

B. Freezing rain currently occurring at the reporting station

C. A frontal zone of rapidly approaching convective activity

D. A fog bank with rain reducing the slant-range visibility

11. Which factor most increases the time of useful consciousness during a rapid decompression?

A. A lower cabin altitude before the decompression occurs

B. A higher rate of physical exertion immediately afterward

C. An increased ambient temperature inside the cabin

D. A faster rate of climb following the decompression event

12. A pilot reviewing an instrument approach chart sees a negative-L symbol — a white "L" inside a black circle — printed beside the airport's lighting data. What does this symbol indicate?

A. The airport provides full fueling and ground servicing on the field

B. A control tower operates continuously at the airport location

C. The approach includes a mandatory holding pattern before final

D. Pilot-controlled lighting is available and activated by radio

13. A pilot encounters embedded thunderstorms in stratiform cloud. Why are these particularly hazardous on an instrument flight?

A. They are hidden within clouds and cannot be seen and avoided visually

B. They produce only light precipitation with negligible turbulence

C. They form exclusively above the maximum altitude of most aircraft

D. They appear clearly on every aircraft's standard weather display

14. What is the primary danger of carbon monoxide exposure in the cockpit?

A. It causes the cabin pressure to drop without any warning

B. It reduces engine power output during the climb to altitude

C. It binds to hemoglobin and reduces oxygen carried in the blood

D. It freezes the pitot-static system at high cruise altitudes

15. A pilot reviews a TAF showing "TEMPO 2024 BKN008." What does the "TEMPO" group indicate?

A. The conditions are the prevailing forecast for the entire period

B. The conditions will become permanent at the stated time

C. A correction to a previously issued and erroneous forecast

D. Temporary fluctuations expected during the stated time window

16. Which type of fog forms when warm moist air moves over a cold surface?

A. Radiation fog produced by overnight terrestrial cooling effects

B. Upslope fog created by air rising along sloping terrain features

C. Steam fog rising from a warm water surface into cold air

D. Advection fog driven by the horizontal movement of moist air

17. What is the significance of the "freezing level" to an instrument pilot planning a flight?

A. It marks the altitude where the autopilot must be disengaged

B. It indicates where the strongest winds aloft will be encountered

C. It identifies altitudes where structural icing becomes a concern

D. It defines the altitude at which oxygen becomes legally required

18. A pilot at night notices the autokinetic illusion. What causes this effect?

A. A bright light on the ground appearing to grow rapidly larger

B. A stationary light appearing to move when stared at in darkness

C. A series of lights creating a false sense of forward motion

D. The horizon disappearing entirely during a banked turn at night

19. What does a station model on a surface analysis chart depict?

A. Only the temperature and dewpoint at the reporting location

B. The forecast conditions expected over the next twelve hours

C. The wind aloft data measured at multiple flight levels

D. Observed weather elements such as wind, sky cover, and pressure

20. Which condition is most favorable for the formation of structural icing?

A. Visible moisture present with temperatures near or below freezing

B. Clear dry air at temperatures well below the freezing point

C. High humidity with temperatures far above the freezing level

D. Turbulent air free of any visible moisture at cold temperatures

21. A pilot reads "OVC015CB" in a METAR. What does the "CB" notation signify?

A. A ceiling balloon was used to determine the cloud height

B. The clouds are composed of ice crystals at that altitude

C. A correction to the previously reported ceiling value

D. Cumulonimbus clouds are present at the reported altitude

22. What human factor does the term "fatigue" most directly degrade in instrument flight?

A. The aircraft's mechanical reliability during long flights

B. The accuracy of the navigation receivers over time aloft

C. The structural integrity of the airframe under repeated loads

D. The pilot's alertness, judgment, and reaction time during flight

23. Which weather product provides a graphical forecast of conditions such as icing and turbulence over a region?

A. A METAR giving a single-station surface observation only

B. A Graphical Forecast for Aviation covering broad area conditions

C. A PIREP summarizing one pilot's encountered conditions

D. A NOTAM describing changes to navigation aids and facilities

24. A pilot experiences the "graveyard spiral" illusion. What is the dangerous tendency it produces?

A. A belief that a prolonged turn has stopped, prompting a re-bank into a dive

B. A false sensation that the aircraft is climbing during level flight

C. An urge to pitch the nose up sharply during a rapid acceleration

D. A perception that the wings are level when actually descending fast

25. What does the term "dewpoint spread" help an instrument pilot anticipate?

A. The maximum altitude at which clouds will form in the area

B. The wind direction expected at the surface during the approach

C. The strength of the turbulence likely along the planned route

D. The likelihood of fog or low clouds as the spread narrows

26. Which stage of hypoxia symptoms includes euphoria and impaired judgment without the pilot's awareness?

A. The symptoms appear only after the pilot loses consciousness fully

B. The symptoms are always immediately obvious to the affected pilot

C. The insidious onset means the pilot may not recognize the impairment

D. The symptoms occur exclusively during the descent back to lower altitude

27. What does an isobar on a surface weather chart connect?

A. Points of equal temperature across the charted region

B. Points of equal elevation above mean sea level on terrain

C. Points of equal atmospheric pressure across the surface area

D. Points where precipitation of equal intensity is occurring

28. A pilot must interpret the "ceiling" reported in an aviation weather report. How is ceiling defined?

A. The height of the highest cloud layer reported at the station

B. The lowest broken or overcast layer or vertical visibility

C. The average height of all cloud layers above the airport

D. The altitude at which visibility first drops below three miles

29. Which illusion is most likely when flying into an area with a sloping cloud deck?

A. A false sensation of accelerating rapidly during a steady cruise

B. A perception that a stationary light is moving in the dark

C. A tendency to align the wings with the sloping clouds, not the true horizon

D. An impression that the runway is wider than its actual dimensions

30. What is the primary hazard associated with flight into an area of freezing rain?

A. Rapid and severe ice accumulation on the airframe and surfaces

B. A sudden loss of all radio communication with the controlling facility

C. An immediate failure of the gyroscopic flight instruments

D. A complete loss of engine power due to fuel contamination

31. A pilot reviews winds and temperatures aloft and sees "9900" coded for a level. What does this signify?

A. Winds from 099 degrees at zero knots at that altitude level

B. A wind speed of 99 knots from a direction of 090 degrees

C. Light and variable winds of less than five knots at the level

D. A temperature of 99 degrees below zero at the reported altitude

32. What physiological effect does rapid ascent have related to trapped gas in the body?

A. It improves oxygen absorption efficiency in the bloodstream

B. It increases the partial pressure of oxygen reaching the lungs

C. It reduces the risk of any decompression-related symptoms

D. Trapped gas expands, causing discomfort in the ears and sinuses

33. Which type of turbulence is associated with the jet stream and clear skies at high altitude?

A. Mechanical turbulence caused by airflow over surface obstructions

B. Convective turbulence from rising thermals over heated terrain

C. Clear air turbulence occurring near the jet stream boundaries

D. Frontal turbulence found only at the surface boundary of a front

34. A pilot must determine the meaning of "P6SM" in a TAF visibility group. What does it indicate?

A. Visibility is precisely six statute miles at the reporting time

B. Visibility is greater than six statute miles at the location

C. Precipitation is reducing visibility to six statute miles

D. A pressure reading of six units measured at the station surface

35. What is the primary cause of the "false horizon" illusion at night?

A. A bright runway making the aircraft appear higher than actual

B. A stationary light appearing to drift in a darkened sky

C. Rapid head movement during a turn triggering disorientation

D. Sloping clouds or ground lights mistaken for the true horizon

36. Which weather condition is the principal hazard of a microburst on approach?

A. A powerful downdraft and shifting winds threatening aircraft control

B. A gradual reduction in visibility from accumulating light precipitation

C. A steady headwind that slowly increases the aircraft's groundspeed

D. A mild updraft assisting the aircraft in maintaining its glidepath

37. What does the abbreviation "AIRMET" describe in aviation weather?

A. A report of severe conditions hazardous to all aircraft types

B. Weather potentially hazardous mainly to light or single-engine aircraft

C. A routine hourly observation of surface conditions at an airport

D. A forecast valid only for high-altitude jet route operations

38. A pilot at 14,000 feet without supplemental oxygen for an extended period risks what condition?

A. Hypoxia from reduced oxygen partial pressure impairing performance

B. Hyperventilation from breathing too rapidly at cruising altitude

C. Decompression sickness from nitrogen bubbles forming in tissue

D. Carbon monoxide poisoning from a leaking exhaust manifold

39. What does a warm front typically bring as it approaches an area?

A. A narrow line of violent thunderstorms with rapid clearing afterward

B. Sudden gusty winds and a sharp temperature drop at passage

C. A wide area of layered clouds and steady precipitation ahead of it

D. Immediate clearing skies with strong turbulence at the boundary

40. Which factor most affects the rate of ice accumulation on an aircraft?

A. The aircraft's transponder code assigned by the controlling facility

B. The cabin temperature maintained by the environmental system

C. The current barometric altimeter setting at the destination airport

D. The size of the supercooled water droplets and the airspeed flown

41. A pilot must interpret the "vertical visibility" reported as "VV004." What does this mean?

A. The cloud bases are at exactly 400 feet above the airport surface

B. Visibility along the runway is restricted to 400 feet of distance

C. The sky is obscured and vertical visibility into it is 400 feet

D. A cloud layer tops out at 4,000 feet above the reporting station

42. What is the primary purpose of supplemental oxygen requirements in the regulations?

A. To improve engine performance during high-altitude cruise flight

B. To prevent hypoxia by maintaining adequate blood oxygen levels

C. To pressurize the cabin during a rapid emergency descent

D. To reduce fatigue caused by long durations at low cruising altitudes

43. A pilot reviews a constant pressure chart. What does such a chart primarily depict?

A. Surface temperatures and dewpoints at reporting stations

B. Winds, temperatures, and heights at a specific pressure level

C. The location of all active thunderstorm cells in a region

D. The minimum enroute altitudes for the charted airway segments

44. Which illusion results from an abrupt head movement during a turn in instrument conditions?

A. The Coriolis illusion producing a strong but false sensation of rotation

B. The autokinetic illusion of a still light appearing to move slowly

C. The false horizon caused by sloping clouds in the distance

D. The runway width illusion affecting the perception of approach height

45. What does the term "lifted index" indicate on a weather product?

A. The expected ceiling height during the forecast time window

B. The probable visibility reduction from fog or precipitation

C. Atmospheric stability and the potential for thunderstorm development

D. The freezing level altitude relevant to structural icing concerns

46. A pilot experiences "empty field myopia" at altitude. What is this condition?

A. The eyes focusing only a short distance ahead when no objects are visible

B. A complete loss of peripheral vision during a high-altitude climb

C. An inability to distinguish colors in low-light cockpit conditions

D. A temporary blindness from staring directly at a bright light source

47. What does the contraction "BR" in a METAR present weather group indicate?

A. A brief shower of rain expected to pass quickly over the field

B. Mist reducing visibility to between five-eighths and six miles

C. A broken cloud layer covering most of the visible sky

D. A barometric pressure rise occurring rapidly at the station

48. Which condition describes the most stable atmosphere for instrument flight?

A. A temperature inversion where air resists vertical movement

B. A steep lapse rate promoting strong vertical air currents

C. Rapidly rising thermals over a heated land surface in summer

D. Convective cells building vertically into towering cumulus clouds

49. A pilot must understand the hazard of "scud running." Why is it dangerous under instrument conditions?

A. It requires climbing above the maximum certificated service ceiling

B. It causes the navigation receivers to lose their station signals

C. It triggers automatic disconnection of the autopilot system

D. Flying low beneath low clouds risks terrain and obstacle collision

50. What does the "K index" primarily help forecasters assess?

A. The expected surface wind speed during the forecast period

B. The potential for thunderstorm development and air mass instability

C. The freezing level altitude for icing risk along the route

D. The visibility reduction expected from haze and pollution

51. A pilot reviews a significant weather prognostic chart. What does it forecast?

A. Areas of expected hazardous weather such as turbulence and fronts

B. The current observed surface conditions at all reporting stations

C. The minimum safe altitudes for each charted airway segment

D. The precise routing clearances for IFR traffic in the region

52. Which physiological hazard is most associated with hyperventilation in flight?

A. A buildup of carbon monoxide displacing oxygen in the blood

B. An expansion of trapped intestinal gas during a rapid climb

C. A reduction in carbon dioxide causing dizziness and tingling

D. A binding of nitrogen to hemoglobin during high-altitude flight

53. What does the symbol of a star or asterisk beside a tower frequency on a chart typically denote?

A. The tower provides approach control radar services directly

B. The tower or service operates only part-time, not continuously

C. The frequency is reserved exclusively for emergency use only

D. The tower offers automated weather broadcasts on that frequency

54. A pilot must recognize the conditions for "mountain wave" turbulence. What produces it?

A. Convective heating of valley floors during the afternoon hours

B. The collision of a warm front with a stationary frontal boundary

C. Strong winds flowing perpendicular across a mountain ridge line

D. A temperature inversion trapping pollutants near the surface terrain

55. What is the primary risk of the "black hole approach" illusion at night?

A. A tendency to fly a lower-than-normal approach over dark terrain

B. A false sensation that the aircraft is yawing during the descent

C. An impression that the runway is narrower than it actually is

D. A perception of rapid acceleration as the flaps are extended fully

56. Which weather report would best provide actual conditions encountered by another aircraft in flight?

A. A TAF forecasting conditions expected at the destination airport

B. A PIREP describing real conditions reported by an airborne pilot

C. A METAR giving the surface observation at a fixed ground station

D. A prognostic chart showing the broad regional weather outlook

57. A pilot must determine the meaning of a "squall line" on a weather chart. What is it?

A. A line of thunderstorms often forming ahead of a cold front

B. A boundary between two air masses of identical temperature

C. A region of light steady rain associated with a warm front

D. A zone of clear air turbulence near the high-altitude jet stream

58. What does the regulation require regarding oxygen for flight crew above 14,000 feet MSL in an unpressurized aircraft?

A. The required minimum flight crew must use supplemental oxygen continuously

B. Oxygen is only required for passengers and not for the operating crew

C. Supplemental oxygen is recommended but never specifically required

D. Oxygen must be available only for descents below ten thousand feet

59. A pilot reviews the "tops" of a cloud layer reported in a PIREP. Why is this information valuable?

A. It indicates the exact surface visibility at the departure airport

B. It reports the current altimeter setting for the destination field

C. It helps the pilot plan an altitude clear of clouds and possible icing

D. It defines the minimum descent altitude for the planned approach

60. What is the principal hazard of flying near a developing cumulonimbus cloud?

A. A gradual reduction in outside air temperature during the cruise

B. A slow and predictable decrease in the available daylight visibility

C. A minor increase in fuel consumption from the added headwind

D. Severe turbulence, hail, lightning, and powerful vertical air currents

Answer Key

1. D. Radiation fog — Forms from terrestrial (ground) cooling on clear, calm nights that chills the adjacent air to its dewpoint.

2. B. Mature stage — Coexisting updrafts and downdrafts produce the most severe turbulence, downdrafts, and wind shear.

3. B. Hypoxic hypoxia — Caused by insufficient oxygen partial pressure in the air at altitude.

4. A. Cold front — Produces a narrow band of often intense weather with rapid clearing behind the front.

5. C. Navaid box — Contains the navaid identifier, frequency, and Morse code.

6. D. Wide runway illusion — Makes the aircraft appear higher than actual, tempting a low approach.

7. B. Clear icing — Cumuliform clouds with large supercooled droplets produce severe clear ice.

8. C. Vestibular system — The inner ear sensing motion/balance produces the false sensations of disorientation.

9. D. Wind shear — A sudden change in wind speed or direction over a short distance.

10. B. FZRA — Freezing rain occurring at the station.

11. A. Time of useful consciousness — A lower starting cabin altitude lengthens TUC after a decompression.

12. D. Pilot-controlled lighting — The negative-L symbol (a white "L" within a filled black circle) printed near an airport's lighting data indicates the runway/approach lighting is pilot-controlled, activated by keying the radio on the designated CTAF/frequency. Option A (fueling) and B (continuous tower) are unrelated services with their own distinct notations, and option C (holding) is depicted in the plan/profile view, not by a lighting symbol.

13. A. Embedded thunderstorms — Hidden within stratiform cloud, they cannot be seen and visually avoided.

14. C. Carbon monoxide — Binds to hemoglobin, reducing the blood's oxygen-carrying capacity.

15. D. TEMPO — Temporary fluctuations expected during the stated time window.

16. D. Advection fog — Forms when warm moist air moves horizontally over a cold surface.

17. C. Freezing level — Identifies altitudes where structural icing becomes a concern.

18. B. Autokinetic illusion — A stationary light appears to move when stared at in the dark.

19. D. Station model — Depicts observed elements: wind, sky cover, temperature/dewpoint, pressure, etc.

20. A. Icing conditions — Visible moisture plus temperatures near or below freezing.

21. D. CB — Cumulonimbus clouds present at the reported altitude.

22. D. Fatigue — Degrades alertness, judgment, and reaction time.

23. B. Graphical Forecast for Aviation — Provides graphical area forecasts including icing and turbulence.

24. A. Graveyard spiral — The sensation that a sustained turn has stopped, prompting a re-bank that tightens a descending spiral.

25. D. Dewpoint spread — A narrowing spread signals likely fog or low cloud formation.

26. C. Hypoxia insidious onset — Euphoria and impaired judgment develop without the pilot recognizing the impairment.

27. C. Isobar — Connects points of equal atmospheric pressure.

28. B. Ceiling — The lowest broken or overcast layer, or the vertical visibility into an obscuration.

29. C. Sloping cloud deck — Tempts the pilot to align wings with the clouds rather than the true horizon.

30. A. Freezing rain — Produces rapid, severe ice accumulation on the airframe.

31. C. Winds aloft "9900" — Coded for light and variable winds (less than 5 knots).

32. D. Trapped gas — Expands on ascent, causing ear and sinus discomfort.

33. C. Clear air turbulence — Occurs near jet stream boundaries in cloud-free air.

34. B. P6SM — Visibility greater than six statute miles.

35. D. False horizon — Sloping clouds or ground lights mistaken for the true horizon.

36. A. Microburst — A powerful downdraft with rapidly shifting winds threatening control on approach.

37. B. AIRMET — Weather hazardous mainly to light/single-engine and smaller aircraft.

38. A. Hypoxia — Extended flight at 14,000 ft without oxygen impairs performance via reduced oxygen partial pressure.

39. C. Warm front — Brings a wide area of layered cloud and steady precipitation ahead of it.

40. D. Ice accumulation rate — Governed largely by supercooled droplet size and airspeed flown.

41. C. VV004 — Sky obscured with vertical visibility of 400 feet into the obscuration.

42. B. Supplemental oxygen — Prevents hypoxia by maintaining adequate blood oxygen.

43. B. Constant pressure chart — Depicts winds, temperatures, and heights at a given pressure level.

44. A. Coriolis illusion — Abrupt head movement during a turn produces a strong false sensation of rotation.

45. C. Lifted index — Indicates atmospheric stability and thunderstorm potential.

46. A. Empty field myopia — The eyes relax to a short focal distance when no objects are visible.

47. B. BR — Mist, reducing visibility to roughly 5/8 to 6 statute miles.

48. A. Temperature inversion — A stable layer where air resists vertical movement.

49. D. Scud running — Flying low beneath low clouds risks terrain and obstacle collision.

50. B. K index — Assesses air mass instability and thunderstorm potential.

51. A. Significant weather prognostic chart — Forecasts hazardous weather such as turbulence and frontal positions.

52. C. Hyperventilation — Excess loss of carbon dioxide causes dizziness and tingling.

53. B. Part-time service — A star/asterisk by a frequency denotes part-time (non-continuous) operation.

54. C. Mountain wave — Strong winds flowing perpendicular across a ridge produce wave turbulence.

55. A. Black hole approach — Dark terrain leads to a tendency to fly a lower-than-normal approach.

56. B. PIREP — Reports actual conditions encountered by an airborne pilot.

57. A. Squall line — A line of thunderstorms often forming ahead of a cold front.

58. A. Oxygen above 14,000 — The required minimum flight crew must use supplemental oxygen continuously above 14,000 ft MSL.

59. C. Cloud tops in a PIREP — Help plan an altitude clear of clouds and possible icing.

60. D. Cumulonimbus hazard — Severe turbulence, hail, lightning, and powerful vertical currents.