PRACTICE EXAM 9: FIREFIGHTER I & II SIMULATION (150 QUESTIONS)

1. Under the NFPA 1001 candidate fitness requirements referenced through NFPA 1582, a recruit firefighter must be medically evaluated to which classification of work-capacity standard?

A. Light duty equivalent to office work

B. Moderate duty equivalent to general construction

C. Hazardous duty equivalent to law enforcement patrol

D. Heavy duty with arduous physical demand classification

2. The fire tetrahedron differs from the older fire triangle because it adds which fourth element to fuel, heat, and oxygen?

A. Pressure differential across the combustion zone

B. Catalysts present in the burning fuel matrix

C. Self-sustaining uninhibited chemical chain reaction

D. Radiant feedback from heated surrounding surfaces

3. Which mode of heat transfer is responsible for igniting an exposure building across a narrow alley from a fully involved structure fire?

A. Conduction through shared structural members

B. Convection driven by rising heated gas columns

C. Radiation from the flame front to the exposure surface

D. Direct flame impingement on the exposure wall

4. The point at which a fuel produces sufficient vapors to ignite momentarily in the presence of an external ignition source, but does not sustain combustion, is called the?

A. Autoignition temperature

B. Fire point of the substance

C. Ignition temperature threshold

D. Flash point of the substance

5. Class B fires involve which category of fuel?

A. Flammable and combustible liquids and gases

B. Ordinary combustibles such as wood and paper

C. Energized electrical equipment under load

D. Combustible metals such as magnesium and titanium

6. The dry-chemical extinguishing agent that is rated for Class A, B, and C fires and is colored pale yellow is?

A. Sodium bicarbonate based agent

B. Potassium bicarbonate (Purple-K) agent

C. Potassium chloride based agent

D. Monoammonium phosphate based agent

7. The proper PASS acronym used when operating a portable fire extinguisher stands for?

A. Position, Activate, Spray, Sweep

B. Pull, Aim, Squeeze, Sweep

C. Prepare, Approach, Squeeze, Stop

D. Point, Aim, Spray, Suppress

8. A Class K extinguishing agent is specifically designed for fires involving?

A. Energized electrical control panels

B. Cooking oils and animal fats in commercial kitchens

C. Combustible metal shavings in machine shops

D. Class A combustibles in confined storage areas

9. The minimum amount of oxygen present in air below which most flames cannot be sustained is approximately?

A. 15 percent oxygen concentration by volume

B. 19.5 percent oxygen concentration by volume

C. 10 percent oxygen concentration by volume

D. 5 percent oxygen concentration by volume

10. Which stage of fire growth in a compartment is characterized by rapidly accelerating heat release, ceiling-jet thickening, and a sharp transition to full-room involvement?

A. Incipient stage of fire development

B. Growth stage with limited heat release

C. Flashover transition to full involvement

D. Decay stage following fuel exhaustion

11. A ventilation-limited (fuel-rich) compartment fire that suddenly receives fresh air through an opened door or window can produce which extreme fire behavior event?

A. Backdraft from sudden oxygen reintroduction

B. Flashover from radiant ceiling-layer feedback

C. Rollover from unburned gas accumulation

D. Smoke explosion from external ignition source

12. Under NFPA 1001, the body system most stressed during structural firefighting operations and most commonly implicated in line-of-duty deaths is the?

A. Cardiovascular system under heat and exertion load

B. Respiratory system under products of combustion

C. Musculoskeletal system under load-carrying stress

D. Neurological system under cognitive task loading

13. The thermal protective performance (TPP) rating of structural turnout clothing is measured in?

A. Calories per square inch of fabric area

B. Watts per square meter of surface area

C. Calories per square centimeter of fabric area

D. Joules per kilogram of garment mass

14. The maximum amount of time a structural firefighter should remain inside a hot, working structure before being rotated through formal rehabilitation is approximately?

A. 60 minutes of continuous interior work

B. 30 minutes regardless of cylinder duration

C. 45 minutes of moderate work activity

D. Two SCBA cylinders or 45 minutes of work

15. The intermediate component of structural turnout gear that traps heated air to provide thermal insulation is the?

A. Outer shell of flame-resistant fabric

B. Moistre barrier between layers of the garment

C. Thermal liner of quilted insulating material

D. Wristlet cuff at the end of each sleeve

16. A Class II safety harness, as referenced in NFPA 1983, is rated for which type of use?

A. Two-person rescue load up to 600 pounds

B. One-person escape from elevated workplace

C. Belt only suitable for ladder operations

D. Suspension trauma prevention only

17. The figure-eight on a bight is used by firefighters primarily as a?

A. Hitch for securing a tool to a fall line

B. Loop for attaching to anchors or carabiners

C. Bend joining two ropes of equal diameter

D. Stopper preventing rope end pull-through

18. A bowline knot is used primarily to form a?

A. Stopper at the end of a working line

B. Joining knot between two life safety ropes

C. Hitch used to secure a load to a vertical line

D. Fixed loop that will not slip under load

19. The clove hitch is most commonly used in firefighting to?

A. Secure a hand tool or hose for hoisting

B. Tie two ropes of unequal diameter together

C. Form a foothold for vertical climbing

D. Anchor the working end against the standing part

20. Life safety rope used in fire service operations must be constructed of?

A. Natural manila fibers laid in three strands

B. Continuous synthetic block-creel filament fiber

C. Polypropylene woven over a sisal core

D. Steel wire rope sheathed with synthetic jacket

21. Under NFPA 1983, life safety rope that has been subjected to an impact load must be?

A. Inspected visually and returned to service

B. Removed from life safety service immediately

C. Tagged with reduced load rating after inspection

D. Pressure tested before being returned to service

22. The standard nozzle pressure for a smooth-bore handline tip is?

A. 100 pounds per square inch at the tip

B. 80 pounds per square inch at the tip

C. 75 pounds per square inch at the tip

D. 50 pounds per square inch at the tip

23. The friction loss coefficient for 2½-inch hose is approximately?

A. 2 using the standard cQ^2L formula

B. 8 using the standard cQ^2L formula

C. 15 using the standard cQ^2L formula

D. 24 using the standard cQ^2L formula

24. The flow rate produced by a 1⅛-inch smooth-bore tip operating at 50 psi nozzle pressure is approximately?

A. 265 gallons per minute at the tip

B. 200 gallons per minute at the tip

C. 325 gallons per minute at the tip

D. 180 gallons per minute at the tip

25. A typical fog nozzle on a 1¾-inch handline operating at the standard pressure should deliver approximately what flow rate?

A. 95 gallons per minute through the tip

B. 125 gallons per minute through the tip

C. 250 gallons per minute through the tip

D. 150 gallons per minute through the tip

26. The hose load that allows a single firefighter to extend an attack line off the back step while moving toward the fire is known as the?

A. Accordion preconnect hose load

B. Minuteman preconnect hose load

C. Triple-layer preconnect hose load

D. Flat-load reverse lay configuration

27. A reverse lay describes a hose deployment in which the apparatus?

A. Drops a supply line from the fire back to a water source

B. Stretches an attack line from the apparatus to the fire

C. Lays hose from the hydrant forward toward the fire

D. Carries hose preconnected ready to deploy at scene

28. A forward lay describes a hose deployment in which the apparatus?

A. Drops the attack line ahead of the apparatus

B. Carries hose to the rear of the apparatus only

C. Reverses direction after dropping the supply line

D. Lays supply hose from the hydrant to the fire scene

29. The standard adapter that allows a male coupling on one hose to connect to a male coupling on another piece of equipment is called a?

A. Reducer fitting between unequal diameters

B. Increaser fitting between unequal diameters

C. Siamese appliance combining two lines

D. Double-female adapter for matching threads

30. The hose appliance that allows two separate hoselines to combine into a single larger discharge line is the?

A. Wye appliance with multiple outlets

B. Siamese appliance with multiple inlets

C. Manifold appliance with branch outlets

D. Water thief appliance with bleeder valve

31. The hose appliance that takes one inlet and divides flow between two or more outlets is the?

A. Gated wye with controllable outlets

B. Siamese with combining inlets

C. Reducer for downstream connection

D. Increaser for upstream connection

32. A "water hammer" condition in fire hose is caused by?

A. Pump cavitation in a drafting operation

B. Excessive elevation gain on a standpipe

C. Friction loss exceeding pump output

D. Sudden closing of a valve or nozzle

33. The pressure correction factor for elevation gain when working above the pump is approximately?

A. 0.225 psi per foot of elevation gained

B. 0.5 psi per foot of elevation gained

C. 1.0 psi per foot of elevation gained

D. 5 psi per story above the pump

34. The standpipe outlet pressure that must be provided at the topmost floor under NFPA 14 for Class I systems is at least?

A. 100 pounds per square inch at the outlet

B. 65 pounds per square inch at the outlet

C. 150 pounds per square inch at the outlet

D. 50 pounds per square inch at the outlet

35. A typical Class III standpipe system is characterized by?

A. Fire department connections without hose stations

B. Both occupant-use hose stations and fire department connections

C. Occupant-use hose stations sized for 1½-inch hose only

D. Wet system limited to fire department personnel only

36. The fire department connection (FDC) on a standpipe system is typically supplied at what minimum pressure?

A. 150 pounds per square inch at the inlet

B. 100 pounds per square inch at the inlet

C. 175 pounds per square inch at the inlet

D. 200 pounds per square inch at the inlet

37. A dry-pipe sprinkler system holds which medium in the pipework above the dry-pipe valve until activation?

A. Water under residual system pressure

B. Antifreeze solution for cold locations

C. Nitrogen gas under controlled pressure

D. Pressurized air or nitrogen above the valve

38. The orifice color that identifies a sprinkler head rated at 286°F under NFPA standards is?

A. Blue indicating high-temperature operation

B. Green indicating intermediate operation

C. Yellow indicating intermediate operation

D. Orange indicating ordinary operation

39. The fire pump installed to boost municipal pressure for sprinkler and standpipe systems is governed by which NFPA standard?

A. NFPA 25 governing inspection and testing

B. NFPA 13 governing sprinkler installation

C. NFPA 14 governing standpipe installation

D. NFPA 20 governing fire pump installation

40. A Class A foam concentrate is designed primarily to suppress fires involving?

A. Hydrocarbon liquid spills and pool fires

B. Polar solvent fuels such as alcohol

C. Ordinary combustibles such as wood and grass

D. Three-dimensional liquid fuel surface fires

41. Aqueous film-forming foam (AFFF) suppresses hydrocarbon liquid fires by?

A. Reducing the radiant heat from the flames

B. Forming a film that excludes oxygen and vapors

C. Cooling the fuel below its flash point

D. Diluting the fuel below its lower flammable limit

42. The standard fog-nozzle setting for a balanced foam stream application is approximately?

A. 1 percent foam concentrate proportioned at the eductor

B. The setting recommended for the specific concentrate

C. The narrowest fog pattern available on the nozzle

D. The straight-stream pattern only for penetration

43. Alcohol-resistant foam concentrate is required when fighting fires involving?

A. Liquefied petroleum gas under pressure

B. Hydrocarbon fuels such as gasoline only

C. Polar-solvent fuels such as alcohols and ketones

D. Class A combustibles in residential occupancies

44. The foam expansion ratio classified as "medium expansion" falls within which range?

A. Less than 20 to 1 finished foam to solution

B. Between 20 to 1 and 200 to 1 finished foam ratio

C. Between 20 to 1 and 200 to 1 finished foam ratio

D. Greater than 200 to 1 finished foam to solution

Wait, options C and D contradict each other in question 44 — let me re-verify my draft. Looking again, I see I duplicated B and C. Let me fix that.

44. The foam expansion ratio classified as "medium expansion" falls within which range?

A. Less than 20 to 1 finished foam to solution

B. Less than 5 to 1 finished foam to solution

C. Between 20 to 1 and 200 to 1 finished foam ratio

D. Greater than 200 to 1 finished foam to solution

45. The minimum proportioning percentage typically used for Class B AFFF foam concentrate on hydrocarbon fuels is approximately?

A. One-half percent solution from concentrate

B. One percent solution from concentrate

C. Two percent solution from concentrate

D. Three percent solution from concentrate

46. The piece of forcible entry equipment commonly known as the "irons" consists of?

A. A pick-head axe paired with a Halligan bar

B. A flat-head axe paired with a Halligan bar

C. A maul paired with a sledgehammer head

D. A Kelly tool paired with a flat-head axe

47. The proper position for the Halligan bar when forcing an inward-opening door is?

A. Adz end above the lock with the bevel toward the door

B. Pick end above the lock with the bevel away from the door

C. Adz end at the lock with the bevel toward the door

D. Adz end at the lock with the bevel away from the door

48. The through-the-lock forcible entry method is used primarily when?

A. The door has a deadbolt that cannot be defeated

B. The lock cylinder must be preserved for evidence

C. Forcing the door would cause excessive damage to property

D. The hinges are exposed and accessible on the outside

49. A K-tool used in through-the-lock forcible entry is designed to?

A. Grip and pull the lock cylinder from the door

B. Drive into the door jamb above the latch

C. Sever the deadbolt with hardened steel jaws

D. Pry the door open at the hinge side of the frame

50. The acronym used to remember the steps of size-up at a working fire is?

A. RECEO VS for size-up priorities

B. COAL WAS WEALTH for size-up factors

C. LIPS for size-up communication

D. SLICE-RS for tactical priorities

51. Under the SLICE-RS tactical model, the "C" represents?

A. Confine fire to area of origin

B. Coordinate company assignments

C. Communicate with command staff

D. Cool the space from a safe location

52. The two-in/two-out OSHA requirement at 29 CFR 1910.134 may be waived under which condition?

A. When supervisory rank has approved single-entry

B. When the structure is small and one-room only

C. When command has assumed a defensive strategy

D. When a known life rescue is in progress

53. A defensive fire attack strategy is appropriate when?

A. The interior is tenable and rescue may be possible

B. Adequate water supply allows interior operations

C. The structure is no longer tenable and not savable

D. The seat of the fire can be reached safely

54. The "transitional" attack involves?

A. A defensive operation throughout the incident

B. An exterior attack followed by abandonment of the structure

C. An interior attack from the start of operations

D. A brief exterior knock-down followed by interior advance

55. The recommended technique for entering a smoke-filled room with low visibility is?

A. To stand fully upright to conserve energy

B. To proceed at a moderate walking pace

C. To follow a hoseline with a personal light

D. To crawl while maintaining contact with a hoseline or wall

56. A primary search is defined as?

A. A search conducted after the fire is extinguished

B. A detailed search of every room in the structure

C. A rapid search of areas where victims are most likely

D. A search of the exterior perimeter for survivors

57. A secondary search is defined as?

A. A thorough search of every room after the primary

B. A search conducted by the rapid intervention crew

C. A search led by chief officers in command

D. A search confined to the exposure buildings

58. The proper search pattern for a single firefighter conducting a right-hand search in a residential occupancy is to?

A. Move counterclockwise from the entry point

B. Cross the room diagonally toward window light

C. Follow a hoseline directly toward heat sources

D. Keep the right hand in contact with the wall throughout

59. A victim located during search who is unconscious and not breathing should be?

A. Treated in place until the fire is controlled

B. Left for the EMS crew to remove after suppression

C. Removed from the structure as quickly as practical

D. Repositioned to a recovery position and ventilated

60. Horizontal ventilation involves?

A. Opening the roof to release hot gases vertically

B. Opening doors and windows at the same level as the fire

C. Mechanical ventilation using a positive-pressure fan

D. Hydraulic ventilation using a fog stream from outside

61. Vertical ventilation is most effective when?

A. The fire has entered the decay stage

B. The fire is below the roof and gases can rise

C. The structure has no basement levels

D. The fire is contained to a single floor only

62. Positive-pressure ventilation (PPV) places a fan?

A. At the exit point to draw gases out of the structure

B. Inside the involved room to push gases laterally

C. At the entry point to push fresh air into the structure

D. On the roof to draw gases out vertically

63. Negative-pressure ventilation (also called hydraulic ventilation) involves?

A. Pushing air into the structure with a smoke ejector

B. Drawing air out of the structure with a smoke ejector

C. Increasing pressure to force gases out openings

D. Using natural convection currents only

64. Hydraulic ventilation uses a?

A. Positive-pressure fan at the entry point

B. Smoke ejector positioned at the window

C. Fog stream directed out a window from inside

D. Trench cut through the roof structure

65. The proper size of an inspection cut made on a roof to assess fire conditions in the attic is approximately?

A. 12 by 12 inches in the roof decking

B. 24 by 24 inches in the roof decking

C. 36 by 36 inches in the roof decking

D. 6 by 6 inches in the roof decking

66. A trench cut is used on a roof to?

A. Quickly relieve heat and smoke from the attic

B. Provide direct access to the seat of the fire

C. Allow firefighters to descend into the structure

D. Stop horizontal fire spread through a cockloft

67. The most dangerous position for a firefighter on a roof during vertical ventilation is?

A. Working from the unburned side of the cut

B. Working between the cut and the fire below

C. Working on the windward side of the structure

D. Working with a charged hoseline in place

68. Building construction Type I is characterized by?

A. Wood-frame walls with non-combustible cladding

B. Non-combustible structural members protected with fire-resistive materials

C. Ordinary masonry walls with wood-joisted floors

D. Heavy timber posts and beams of minimum dimensions

69. Building construction Type V is characterized by?

A. Heavy timber posts and beams with masonry walls

B. Non-combustible walls with limited combustible roof

C. Wood-frame walls and combustible structural members

D. Masonry exterior with wood-joisted interior floors

70. A truss roof system carries the greatest fire-collapse risk because?

A. Failure of a single component can collapse the entire truss

B. Truss spans are limited to short residential lengths

C. Truss systems include redundant load paths

D. Truss systems are typically made of heavy timber

71. Lightweight wood-truss floor systems in residential construction typically fail under fire exposure within approximately?

A. Two hours of direct flame exposure

B. Five to ten minutes of direct flame exposure

C. Thirty to forty-five minutes of direct flame exposure

D. One full hour of direct flame exposure

72. A bowstring truss roof is most commonly found over?

A. Single-family residential dwellings

B. Modern strip-mall commercial occupancies

C. Multi-story office buildings of recent construction

D. Older commercial buildings with long clear spans

73. The proper climbing angle for a fire service ground ladder is approximately?

A. 60 degrees from horizontal at the base

B. 90 degrees from horizontal at the base

C. 75 degrees from horizontal at the base

D. 45 degrees from horizontal at the base

74. The number of feet that a ground ladder should extend above a roof line to allow safe egress is?

A. One full rung above the roof edge

B. Two full rungs above the roof edge

C. Three full rungs above the roof edge

D. Five full rungs above the roof edge

75. A roof ladder is identified by?

A. Telescoping side rails with locking detents

B. Hooks at the upper end that grip the ridge

C. A folding base for compact apparatus storage

D. A solid beam construction with continuous handrails

76. A Bangor ladder is identified by?

A. A roof ladder with hooks at the upper end

B. An extension ladder equipped with tormentor poles

C. A folding ladder used inside apartments

D. A two-section ladder with no halyard system

77. The proper way for a single firefighter to carry a 24-foot extension ladder is the?

A. Two-person flat carry on the shoulder

B. Suitcase carry held at the side of the body

C. Shoulder carry with beam on the shoulder

D. Hip carry with one rung resting on the hip

78. When raising a ground ladder near overhead electrical wires, firefighters must maintain a minimum separation of?

A. 10 feet from the nearest energized conductor

B. 5 feet from the nearest energized conductor

C. 15 feet from the nearest energized conductor

D. 25 feet from the nearest energized conductor

79. A foot-tie or heel of a ground ladder serves to?

A. Anchor the tip of the ladder against horizontal slip

B. Prevent the butt from sliding outward during use

C. Lock the fly section against unintended retraction

D. Secure the butt against outward movement during climbing

80. Under NFPA 1932, ground ladders must receive a formal service test at minimum?

A. Every six months under all conditions

B. Every three years from date of manufacture

C. Every five years from date of manufacture

D. Annually and after any suspected damage

81. SCBA cylinders rated at 4,500 psi are typically?

A. Steel construction with welded seams

B. Aluminum construction with seamless walls

C. Composite construction with aluminum liners

D. Fiberglass construction with steel reinforcement

82. The hydrostatic test interval for a composite (carbon-fiber wrapped) SCBA cylinder is?

A. Every three years from date of manufacture

B. Every five years from date of manufacture

C. Every ten years from date of manufacture

D. Every fifteen years from date of manufacture

83. A composite SCBA cylinder has a maximum service life from date of manufacture of approximately?

A. Ten years regardless of condition

B. Twenty years from manufacture date

C. Fifteen years from manufacture date

D. Thirty years from manufacture date

84. The PASS device worn by a firefighter alarms automatically after how long of motionlessness?

A. Approximately 30 seconds of no motion detected

B. Approximately 60 seconds of no motion detected

C. Approximately 90 seconds of no motion detected

D. Immediately upon any loss of motion detection

85. The acronym SCBA represents which type of breathing apparatus?

A. Self-contained breathing apparatus with cylinder

B. Supplied-circuit breathing apparatus connected to a remote source

C. Surface-controlled breathing apparatus with hose

D. Single-cylinder breathing apparatus for confined-space use

86. A supplied-air respirator (SAR) differs from an SCBA in that the SAR?

A. Uses a smaller cylinder worn on the chest

B. Operates on demand only without pressure assist

C. Receives breathing air from a remote source through a hose

D. Filters ambient air through a chemical cartridge

87. The buddy-breathing or emergency breathing support system (EBSS) on an SCBA allows?

A. Two firefighters to share a single air source briefly

B. A firefighter to refill a cylinder from another regulator

C. Connection to a building standpipe outlet

D. Manual override of the low-pressure alarm

88. The rapid-intervention crew (RIC) is established at every working structure fire to?

A. Conduct primary searches in the involved area

B. Operate handlines on the unburned exposures

C. Coordinate the placement of ground ladders

D. Be standing by to rescue downed or trapped firefighters

89. The standard distress signal call used to indicate a firefighter is lost, trapped, or in immediate danger is?

A. EMERGENCY repeated three times in sequence

B. MAYDAY repeated three times in sequence

C. PAN-PAN repeated three times in sequence

D. URGENT repeated three times in sequence

90. Under the LUNAR self-report acronym used during a MAYDAY transmission, the "N" represents?

A. Need for resources at the firefighter's location

B. Nearest exit point known to the firefighter

C. Name of the firefighter calling the MAYDAY

D. Nature of the situation requiring rescue

91. Under the LUNAR self-report acronym, the "A" represents?

A. Air status of the firefighter calling

B. Assignment of the firefighter at the time of MAYDAY

C. Approximate location since last transmission

D. Area of the structure where the firefighter is trapped

92. Under the LUNAR self-report acronym, the "R" represents?

A. Required cylinder change for the firefighter

B. Remaining building access points

C. Resources needed for rescue from the position

D. Radio channel currently in use

93. The accountability tag (or PAR tag) carried by each firefighter is collected at?

A. The fire apparatus before entering the structure

B. The IC's command post during the incident

C. The accountability board at the point of entry

D. The rehab area after exiting the structure

94. A Personnel Accountability Report (PAR) is typically conducted at intervals of approximately?

A. Every 5 minutes during interior operations

B. Every 15 to 20 minutes during interior operations

C. Every 30 minutes during interior operations

D. Once per incident at termination of operations

95. A Tactical Worksheet kept by the IC typically includes?

A. Only the radio channel assignments for the incident

B. Resource assignments, accountability, and benchmarks

C. Building owner contact and insurance information

D. Pre-incident plans drawn during the response

96. The base of the Incident Command System organizational structure consists of?

A. Command and the four primary general staff sections

B. Command and a single operations section only

C. Command and the planning section reporting directly

D. Command and a logistics chief reporting directly

97. The four primary general staff sections under ICS are?

A. Operations, Planning, Logistics, and Communications

B. Operations, Planning, Liaison, and Finance

C. Operations, Planning, Logistics, and Finance/Administration

D. Operations, Resources, Logistics, and Safety

98. A Unified Command structure is used when?

A. A single agency has jurisdictional responsibility

B. Multiple agencies with jurisdiction must coordinate

C. The incident is contained to one geographic area only

D. The incident commander has been delegated authority

99. The maximum recommended span of control for a single ICS supervisor is?

A. Three to five subordinates as a maximum

B. Five to seven subordinates as a maximum

C. Seven subordinates as a maximum at any level

D. Ten subordinates with experienced personnel

100. A Division within the ICS structure is defined by?

A. The functional task being performed at the incident

B. A specific geographic area of the incident scene

C. The agency of jurisdiction over the area

D. The number of resources assigned to the work

101. A Group within the ICS structure is defined by?

A. The specific geographic area of operation

B. The number of personnel assigned to the task

C. The functional assignment performed regardless of location

D. The shift schedule of the assigned personnel

102. A Branch within the ICS structure is established when?

A. The number of resources approaches span-of-control limits

B. A single agency needs to maintain unified command

C. The incident type is classified as a Type 5 incident

D. Span-of-control limits at the section level are exceeded

103. The IDLH atmosphere is defined under OSHA as one that?

A. Has been declared unsafe by the incident commander

B. Poses an immediate threat to life or health, or could cause irreversible health effects

C. Exceeds 19.5 percent oxygen but has detectable contaminants

D. Has not been monitored for atmospheric content prior to entry

104. The lower explosive limit (LEL) of a flammable gas in air is the?

A. Minimum concentration that will support combustion

B. Maximum concentration at which combustion is possible

C. Concentration at which the gas is harmful by inhalation

D. Concentration at which the odor becomes detectable

105. The upper explosive limit (UEL) of a flammable gas in air is the?

A. Concentration at which combustion produces maximum heat

B. Maximum concentration above which combustion will not occur

C. Concentration at which evacuation must be ordered

D. Concentration at which sensors must alarm continuously

106. A four-gas monitor typically displays which four atmospheres simultaneously?

A. Carbon monoxide, oxygen, hydrogen cyanide, and methane

B. Oxygen, lower explosive limit, hydrogen sulfide, and ammonia

C. Oxygen, lower explosive limit, carbon monoxide, and hydrogen sulfide

D. Oxygen, carbon dioxide, carbon monoxide, and hydrogen cyanide

107. The hot zone at a hazmat incident is the area?

A. Where contamination is present or suspected to be present

B. Where command and the rehab area are typically located

C. Beyond the cold zone outside any contamination concern

D. Used by media and family members of those affected

108. The warm zone at a hazmat incident is used primarily for?

A. Initial entry into the contaminated area for sampling

B. Decontamination of personnel and equipment leaving the hot zone

C. Command and resources staging outside any contamination

D. Public information and media interactions only

109. Under DOT placarding, a placard with a flame symbol and the number "3" indicates?

A. A Class 1 explosive material in transport

B. A Class 2 compressed gas under pressure

C. A Class 6 toxic or infectious substance

D. A Class 3 flammable liquid in transport

110. Under DOT placarding, a placard displaying the number "1" indicates?

A. An explosive material in transport

B. A flammable solid in transport

C. A toxic substance in transport

D. A radioactive material in transport

111. The Emergency Response Guidebook (ERG) is published primarily by?

A. The U.S. Department of Transportation

B. The National Fire Protection Association

C. The Environmental Protection Agency

D. The Occupational Safety and Health Administration

112. The orange section of the ERG contains?

A. The yellow-bordered guides indexed by UN number

B. The blue-bordered guides indexed by material name

C. The numbered emergency action guides for response

D. The initial isolation and protective action distances

113. The green section of the ERG provides?

A. The numbered guides for response actions

B. The blue-bordered listings of materials by name

C. The yellow-bordered listings of materials by ID number

D. The initial isolation and protective action distances for highlighted materials

114. Level A chemical protective clothing provides?

A. Splash protection only to the skin and eyes

B. Vapor protection without supplied breathing air

C. Limited splash protection with respiratory protection

D. Maximum skin, respiratory, and vapor protection

115. Level B chemical protective clothing provides?

A. The highest level of skin and respiratory protection

B. The highest level of respiratory protection with lesser skin protection

C. Splash protection only with no respiratory protection

D. Limited protection equivalent to structural turnout gear

116. A "weapon of mass destruction" (WMD) under federal definitions typically includes?

A. Chemical, biological, radiological, nuclear, and high-yield explosive devices

B. Only nuclear or radiological devices producing fallout

C. Only chemical or biological agents requiring decon

D. Conventional firearms used in mass casualty incidents

117. The first priority at every emergency scene is?

A. Life safety of responders and civilians at the scene

B. Incident stabilization through coordinated action

C. Property conservation through salvage operations

D. Environmental protection from contamination

118. The order of incident priorities under the standard fire service model is?

A. Property conservation, incident stabilization, life safety

B. Life safety, incident stabilization, property conservation

C. Incident stabilization, life safety, environmental protection

D. Life safety, property conservation, incident stabilization

119. Salvage operations during a structure fire are conducted to?

A. Reduce property damage from water, smoke, and weather

B. Recover personal effects for the property owner

C. Document the cause and origin of the fire

D. Inspect the structure for code compliance issues

120. A salvage cover is typically constructed of?

A. Heavy canvas only without waterproofing

B. Plastic sheeting suitable for one-time use

C. Tarpaulin without rope reinforcement at edges

D. Vinyl-coated synthetic fabric with reinforced edges

121. Overhaul operations are conducted to?

A. Document the origin and cause of the fire

B. Conduct primary searches for trapped victims

C. Locate and extinguish remaining hidden fire

D. Establish a fire watch after the structure is secured

122. During overhaul, evidence of fire origin should be?

A. Removed and discarded with other debris

B. Photographed and then disposed of for safety

C. Cataloged on a written log for the report

D. Preserved in place for the fire investigator

123. A thermal imaging camera (TIC) detects?

A. Infrared radiation emitted by all objects with temperature

B. Visible light reflected from heated objects

C. Ultraviolet radiation from incandescent sources

D. Microwave emissions from active hot spots

124. The proper use of a thermal imaging camera during search is?

A. To replace direct visual observation of conditions

B. To eliminate the need for a hoseline during search

C. To allow rapid movement without searching contact

D. To supplement other search methods and confirm conditions

125. Carbon monoxide produced during structural fires is dangerous because?

A. It is heavier than air and accumulates in basements

B. It is detected by smell and warns occupants

C. It causes immediate skin burns on contact

D. It binds to hemoglobin with much greater affinity than oxygen

126. Hydrogen cyanide (HCN) is produced during structural fires when?

A. Nitrogen-containing synthetic materials burn

B. Hydrocarbon liquid fuels burn in pool conditions

C. Class A cellulosic materials burn completely

D. Combustible metals burn at very high temperature

127. The minimum required fire flow for a typical single-family residential structure under the National Fire Academy formula is computed using?

A. The cubic footage of the building divided by 200

B. The length times width of the floor area divided by 3

C. The number of bedrooms multiplied by 100 gpm

D. The square footage of the building divided by 100

128. A 100-foot section of 5-inch large-diameter supply hose at 200 psi static pressure weighs approximately?

A. About 25 pounds per 100-foot section

B. About 100 pounds per 100-foot section

C. About 500 pounds per 100-foot section

D. About 750 pounds per 100-foot section

129. A wildland fire's "head" is defined as the?

A. Part of the fire spreading most rapidly downwind

B. Part of the fire that has burned out completely

C. Highest elevation point reached by the fire

D. Side of the fire opposite the prevailing wind

130. A wildland fire's "flank" is defined as the?

A. Side parallel to the principal direction of spread

B. Section that has not yet been ignited by the fire

C. Center of the burned area with no active flame

D. Portion of the fireline secured by hand crews

131. The standard wildland safety acronym LCES stands for?

A. Lifelines, Crews, Equipment, Suppression

B. Lookouts, Crews, Engineers, Suppression

C. Lookouts, Communications, Escape routes, Safety zones

D. Lookouts, Coordination, Engagement, Strategy

132. A wildland fire shelter is deployed as a?

A. Last-resort device when no escape route is available

B. Routine resting area during operational pauses

C. Sleeping cover during overnight assignments

D. Decontamination tarp following pesticide exposure

133. The recommended minimum size of a wildland safety zone for a hand crew is determined by?

A. The number of personnel in the crew only

B. The estimated burning time of the head fire

C. The amount of equipment that must be staged

D. Approximately four times the maximum flame length

134. A vehicle fire involving the engine compartment should be approached from?

A. The downwind side at a 45-degree approach

B. Directly to the rear of the vehicle at low angle

C. A 45-degree angle from the upwind side

D. The driver's door with hoseline ready to advance

135. A vehicle fire involving an alternative-fuel vehicle (such as an electric vehicle with lithium-ion battery) typically requires?

A. The same flow as a conventional vehicle fire

B. Foam application equivalent to a flammable liquid fire

C. Dry-chemical agent applied through the battery pack

D. Large quantities of water for extended cooling duration

136. The proper hose stream type for combating a propane tank exposed to direct flame impingement is?

A. Straight-stream application directly at the flames

B. Wide-angle fog stream applied to cool the vessel surface

C. Foam blanket applied to the surrounding ground

D. Narrow penetrating stream at the relief valve outlet

137. A BLEVE (boiling-liquid expanding-vapor explosion) is most likely to occur when?

A. A pressure vessel ruptures while empty of liquid

B. A non-pressurized container is exposed to ambient heat

C. A pressure vessel containing liquid is exposed to flame impingement

D. A flammable liquid pool reaches its autoignition temperature

138. The recommended initial isolation distance from a small LP-gas tank involved in fire is at least approximately?

A. One-half mile in all directions from the source

B. 100 feet from any structure or exposure

C. 50 feet from any structure or exposure

D. 25 feet from any structure or exposure

139. A confined space is defined under OSHA as a space that?

A. Cannot be entered by personnel under any condition

B. Is large enough to enter, has limited means of entry, and is not designed for continuous occupancy

C. Has been classified as IDLH by the AHJ in writing

D. Contains atmospheric contaminants exceeding the PEL

140. A permit-required confined space differs from a non-permit space because it?

A. Contains or has potential to contain a hazardous atmosphere or hazard

B. Is larger than 100 cubic feet in total interior volume

C. Requires a key from the building owner to access

D. Is located in a basement or below-grade location

141. A "two-in/two-out" team operating in an IDLH atmosphere must?

A. Maintain visual contact at all times during entry

B. Use a tag line connected to the exterior team

C. Maintain visual, voice, or tag-line contact between team members

D. Use voice contact through the SCBA face mask only

142. The OSHA Hazard Communication Standard requires the use of which document at every site where hazardous chemicals are stored?

A. A Material Identification Sheet (MIS) for each substance

B. A Safety Data Sheet (SDS) for each substance present

C. A Chemical Hazard Report (CHR) for each substance present

D. A Daily Inventory Log (DIL) for each substance present

143. A Safety Data Sheet (SDS) is required by OSHA to contain how many standardized sections?

A. Twelve sections under the GHS format

B. Ten sections under the GHS format

C. Sixteen sections under the GHS format

D. Twenty sections under the GHS format

144. A pre-incident plan is developed primarily to?

A. Provide responders with critical information about a property before an incident

B. Allow the AHJ to inspect a property for code violations

C. Document the construction features for insurance purposes

D. Replace the need for size-up at the actual incident

145. A standard fire department response to a reported high-rise structure fire typically includes?

A. Two engine companies and one truck company only

B. One battalion chief and one engine company

C. The minimum response for a residential structure fire

D. Multiple engine companies, truck companies, and chief officers

146. The "fire control floor" used in high-rise operations is typically?

A. The roof level above the involved floor

B. The lobby on the ground level only

C. Two floors below the involved fire floor

D. The basement level adjacent to the fire pump

147. A standpipe hose pack for high-rise operations typically contains?

A. Approximately 50 feet of 1¾-inch hose with attached nozzle

B. Approximately 200 feet of 2½-inch hose without a nozzle

C. Approximately 150 feet of 2½-inch hose with a smooth-bore nozzle

D. Approximately 400 feet of 5-inch supply hose with adapters

148. Elevator use during a high-rise fire response should be?

A. Restricted to firefighter use under Phase II recall, never above the fire floor

B. Permitted only by civilians evacuating below the fire floor

C. Prohibited under all conditions during the incident

D. Permitted up to two floors below the fire floor

149. Phase I elevator recall in a high-rise activates when?

A. Power has failed on the elevator service circuit

B. The elevator car is occupied at the time of alarm

C. A smoke detector activates in an elevator lobby or machine room

D. The fire alarm is reset by maintenance personnel

150. Phase II elevator operation in a high-rise allows?

A. Civilian occupants to use the elevator for evacuation

B. Automatic recall to the lobby with door open

C. Manual override by firefighters with the elevator key

D. The fire pump to be energized for high-floor sprinkler supply

PRACTICE EXAM 9 – ANSWER KEY AND EXPLANATIONS

1. D — Heavy duty with arduous physical demand classification. NFPA 1582 classifies firefighting as arduous, heavy-duty work and requires medical evaluation against that workload. Candidates must be able to perform under heat stress, lift heavy loads, and sustain aerobic effort under SCBA.

2. C — Self-sustaining uninhibited chemical chain reaction. The fire tetrahedron adds the chemical chain reaction to the classic fire triangle of fuel, heat, and oxygen. Suppression agents like dry chemical and clean agents interrupt this chain reaction at the molecular level.

3. C — Radiation from the flame front to the exposure surface. Radiant heat transfer is the dominant mode for exposure ignition across an open gap because it travels in straight lines and requires no medium. Closing exposure window coverings and applying water to exposure surfaces are radiation-control tactics.

4. D — Flash point of the substance. The flash point is the minimum temperature at which a liquid produces vapors that flash on contact with an ignition source but do not sustain burning. The fire point is slightly higher and marks sustained combustion.

5. A — Flammable and combustible liquids and gases. Class B covers liquid and gas fuel fires; Class A covers ordinary combustibles; Class C covers energized electrical equipment; and Class D covers combustible metals.

6. D — Monoammonium phosphate based agent. Monoammonium phosphate (often colored pale yellow) is the multipurpose ABC dry chemical rated for ordinary, liquid, and electrical fires. Sodium bicarbonate and potassium bicarbonate dry chemicals are BC rated only.

7. B — Pull, Aim, Squeeze, Sweep. PASS directs the operator to pull the pin, aim at the base of the fire, squeeze the handle, and sweep across the fuel. Aiming at the flame instead of the base wastes agent and may not extinguish the fire.

8. B — Cooking oils and animal fats in commercial kitchens. Class K agents (typically wet-chemical potassium-based) are specifically formulated for high-temperature kitchen oils and produce a saponification layer that smothers the fire.

9. A — 15 percent oxygen concentration by volume. Most flaming combustion cannot sustain itself below about 15 percent oxygen by volume; smoldering combustion can persist somewhat lower. Normal atmospheric oxygen is approximately 20.9 percent.

10. C — Flashover transition to full involvement. Flashover is the rapid transition from a localized fire to total room involvement when surfaces reach ignition temperature nearly simultaneously. Survival inside a flashed-over room is essentially impossible.

11. A — Backdraft from sudden oxygen reintroduction. A backdraft occurs when a ventilation-limited fire suddenly receives oxygen and the accumulated unburned gases ignite explosively. Indicators include pressurized smoke, blackened windows, and pulsating gas movement.

12. A — Cardiovascular system under heat and exertion load. Cardiac events account for nearly half of firefighter line-of-duty deaths annually. Heat stress, dehydration, and explosive exertion under SCBA combine to overload the cardiovascular system.

13. C — Calories per square centimeter of fabric area. TPP is reported in cal/cm² and represents the energy required to cause a second-degree burn through the assembled ensemble. The NFPA minimum for structural turnout gear is 35 cal/cm².

14. D — Two SCBA cylinders or 45 minutes of work. NFPA 1584 recommends rehabilitation after two 30-minute cylinders or approximately 45 minutes of moderate work, whichever comes first. Bottle-change behavior should not substitute for formal rehab.

15. C — Thermal liner of quilted insulating material. The thermal liner is sandwiched between the outer shell and the moisture barrier and provides the majority of the thermal insulation in structural turnout gear.

16. A — Two-person rescue load up to 600 pounds. A Class II harness under NFPA 1983 is rated for the higher loads associated with two-person rescue, with a minimum working load of 600 pounds. Class I and Class III ratings address smaller and full-body applications respectively.

17. B — Loop for attaching to anchors or carabiners. The figure-eight on a bight forms a strong, easily inspected loop that does not slip under load and is the standard rescue loop knot for life safety rope.

18. D — Fixed loop that will not slip under load. The bowline forms a stable fixed loop that holds under load and unties easily after release. It is used for anchoring and securing loads where a non-slipping loop is needed.

19. A — Secure a hand tool or hose for hoisting. The clove hitch combined with a half hitch is the standard knot for hoisting tools, hose, ladders, and other equipment up to working firefighters above.

20. B — Continuous synthetic block-creel filament fiber. NFPA 1983 requires life safety rope to be constructed of block-creel continuous filament synthetic fiber (typically nylon or polyester), never of natural fiber or steel.

21. B — Removed from life safety service immediately. Any impact-loaded rope must be retired from life safety use because impact loading can damage internal fibers in ways that are not externally visible. It may be downgraded to utility use under departmental SOP.

22. D — 50 pounds per square inch at the tip. Smooth-bore handline nozzles operate at 50 psi at the tip; smooth-bore master streams at 80 psi; and combination (fog) handline nozzles at 100 psi unless designed for low-pressure operation.

23. A — 2 using the standard cQ^2L formula. The friction-loss coefficient "c" for 2½-inch hose is 2 in the cQ^2L formula where Q is flow in hundreds of gpm and L is length in hundreds of feet. The coefficient varies sharply with hose diameter.

24. A — 265 gallons per minute at the tip. A 1⅛-inch smooth-bore tip at 50 psi flows approximately 265 gpm using the formula $29.7 \times d^2 \times \sqrt{NP}$. Tip-size and pressure together determine flow.

25. D — 150 gallons per minute through the tip. A typical 1¾-inch handline fog nozzle operating at the standard 100 psi delivers approximately 150 gpm, though many automatic and low-pressure designs vary the flow range.

26. B — Minuteman preconnect hose load. The minuteman load is designed so a single firefighter can shoulder the working portion of the line and walk it off the bed toward the fire, paying it out behind. The accordion and triple-layer loads have different deployment patterns.

27. A — Drops a supply line from the fire back to a water source. In a reverse lay the apparatus stops at the fire to drop attack equipment and personnel, then proceeds to the water source dropping supply hose along the route.

28. D — Lays supply hose from the hydrant to the fire scene. In a forward lay the apparatus stops at the hydrant first, drops the supply line, and proceeds forward to the fire scene with hose paying out behind it.

29. D — Double-female adapter for matching threads. A double-female adapter joins two male couplings together; a double-male adapter joins two female couplings together. Reducers and increasers change diameter rather than thread orientation.

30. B — Siamese appliance with multiple inlets. A Siamese combines multiple incoming hoselines into a single discharge — it is the appliance commonly seen on fire department connections supplying standpipes and sprinklers.

31. A — Gated wye with controllable outlets. A wye divides a single inlet into multiple outlets, with gated wyes allowing each outlet to be individually opened or closed. A Siamese performs the opposite function — combining inlets.

32. D — Sudden closing of a valve or nozzle. Water hammer is the pressure surge created when flowing water is brought to a sudden stop by a rapidly closed valve. The pressure spike can damage hose, appliances, and pumps.

33. B — 0.5 psi per foot of elevation gained. The pump operator adds (or subtracts) approximately 0.5 psi for every foot of elevation gain (or loss) between the pump and the nozzle. Standpipe operations also reference 5 psi per story as a quick approximation.

34. A — 100 pounds per square inch at the outlet. NFPA 14 requires that Class I standpipes deliver at least 100 psi at the topmost outlet to support 2½-inch hose operations. Older systems may have lower residual pressure requirements.

35. B — Both occupant-use hose stations and fire department connections. Class III standpipes combine both occupant-use (1½-inch) and fire department (2½-inch) outlets. Class I is fire department only, and Class II is occupant only.

36. A — 150 pounds per square inch at the inlet. The fire department connection on a typical standpipe is supplied at approximately 150 psi at the inlet to account for friction loss and elevation in the system above. Building codes and FDC labeling specify the actual design pressure.

37. D — Pressurized air or nitrogen above the valve. A dry-pipe sprinkler system holds air or nitrogen under pressure above the dry-pipe valve; when a sprinkler activates and releases the air, the valve opens and water enters the pipework.

38. A — Blue indicating high-temperature operation. Standard sprinkler color codes assign blue to 286°F, green to 200°F, yellow to 175°F, red to 155°F, and orange to 135°F. The color identifies the activation temperature of the heat-sensitive element.

39. D — NFPA 20 governing fire pump installation. NFPA 20 is the standard for the installation of stationary pumps for fire protection. NFPA 25 covers inspection, testing, and maintenance of water-based systems.

40. C — Ordinary combustibles such as wood and grass. Class A foam is specifically formulated to enhance water penetration into Class A materials, reducing surface tension so water can reach deep-seated burning. It is widely used in wildland firefighting.

41. B — Forming a film that excludes oxygen and vapors. AFFF works by releasing a thin aqueous film that spreads across the surface of a hydrocarbon fuel, excluding oxygen and suppressing vapor production simultaneously.

42. B — The setting recommended for the specific concentrate. Nozzle and proportioner settings must match the foam-concentrate manufacturer's specification. Mismatched settings produce poor-quality foam that may break down rapidly on the fuel.

43. C — Polar-solvent fuels such as alcohols and ketones. Polar solvents draw water out of standard AFFF foam blankets, destroying them. Alcohol-resistant foam (AR-AFFF) contains a polymer that forms a barrier between the foam and the polar fuel.

44. C — Between 20 to 1 and 200 to 1 finished foam ratio. Low-expansion foam is below 20:1, medium expansion is 20:1 to 200:1, and high-expansion foam exceeds 200:1. Medium and high expansion are typically used for total flooding applications.

45. D — Three percent solution from concentrate. Class B AFFF is typically proportioned at 3 percent on hydrocarbons (or 3 percent / 6 percent dual-purpose on hydrocarbons and polar solvents). The proportioning ratio is set at the eductor or proportioning device.

46. B — A flat-head axe paired with a Halligan bar. The "irons" set used universally in the fire service is the flat-head axe (used as a striking tool) married to the Halligan bar (used as a prying and adze tool). The pick-head axe is not used as part of the irons.

47. D — Adz end at the lock with the bevel away from the door. For inward-opening doors, the adz of the Halligan is driven into the jamb at the lock with the bevel facing away from the door. This positions the bar to lever the door inward off its latch.

48. C — Forcing the door would cause excessive damage to property. Through-the-lock entry preserves the door and surrounding hardware by defeating the lock cylinder, then operating the lock from the inside. It is appropriate where conventional forcing would create excessive damage.

49. A — Grip and pull the lock cylinder from the door. The K-tool is wedged behind the lock cylinder face and used (typically with the irons or a special bit) to extract the cylinder so the locking mechanism can be operated directly.

50. B — COAL WAS WEALTH for size-up factors. COAL WAS WEALTH summarizes the size-up factors: Construction, Occupancy, Apparatus and personnel, Life hazard, Water supply, Auxiliary appliances, Street conditions, Weather, Exposures, Area, Location/extent, Time, and Height/hazards.

51. D — Cool the space from a safe location. Under the SLICE-RS model the "C" directs firefighters to cool the space from the safest effective location — typically by application of water from outside through an opening — before transitioning to interior attack.

52. D — When a known life rescue is in progress. The two-in/two-out rule may be deferred only when an immediate rescue of a known viable victim is being performed. Once the rescue is concluded, the requirement applies fully to continued interior operations.

53. C — The structure is no longer tenable and not savable. A defensive strategy is selected when interior conditions, structural integrity, or lack of resources make offensive interior operations untenable. Defensive operations focus on protecting exposures and confining the fire.

54. D — A brief exterior knock-down followed by interior advance. The transitional attack uses a brief exterior stream into the fire compartment to reduce the heat-release rate before transitioning to interior operations. Research has shown that interior conditions improve rather than worsen.

55. D — To crawl while maintaining contact with a hoseline or wall. Crawling places the firefighter beneath the heated upper layer where conditions are cooler and visibility may be slightly better. Maintaining wall or hoseline contact is essential for orientation.

56. C — A rapid search of areas where victims are most likely. The primary search is conducted as quickly as conditions allow, focused on areas where victims are most likely (bedrooms, exits, and areas near the fire). Speed matters because survival times are short.

57. A — A thorough search of every room after the primary. The secondary search is a detailed and methodical search of every room, performed after the primary, typically under improved conditions and by a different crew if possible to provide a fresh perspective.

58. D — Keep the right hand in contact with the wall throughout. A right-hand search maintains continuous wall contact with the right hand, allowing the searcher to navigate the perimeter and return to the entry point by reversing direction.

59. C — Removed from the structure as quickly as practical. An unconscious, unbreathing victim must be removed from the IDLH atmosphere as rapidly as possible because effective resuscitation cannot be performed in a smoke-filled structure. Removal takes priority over in-place treatment.

60. B — Opening doors and windows at the same level as the fire. Horizontal ventilation uses openings on the same level as the fire to release products of combustion. It is coordinated with attack-line position so smoke flows away from advancing crews.

61. B — The fire is below the roof and gases can rise. Vertical ventilation directly above the fire allows the natural buoyancy of hot gases to drive them out of the structure, dramatically improving interior conditions for advance and search.

62. C — At the entry point to push fresh air into the structure. PPV places the fan at the entry, sealing the doorway with the pressure cone, while an exhaust opening at the opposite end of the flow path allows gases to escape under positive pressure.

63. B — Drawing air out of the structure with a smoke ejector. Negative-pressure ventilation positions a smoke ejector at an opening (typically a window) to draw smoke out mechanically. It is slower than PPV but requires no coordinated exhaust opening.

64. C — Fog stream directed out a window from inside. Hydraulic ventilation positions a fog nozzle inside the room with the stream directed out a window, drawing smoke out along with the entrained water droplets. It produces water damage and is used selectively.

65. D — 6 by 6 inches in the roof decking. An inspection hole is small (roughly 6 inches square) and is used to push down into the ceiling below to assess attic conditions before committing to a full vertical opening.

66. D — Stop horizontal fire spread through a cockloft. A trench cut is a long, narrow opening cut all the way across a roof ahead of an advancing cockloft or attic fire, intended to stop horizontal fire spread by creating a planned vent and break-line.

67. B — Working between the cut and the fire below. Working on the fire side of a vertical opening exposes the firefighter to escaping hot gases and flame and to potential collapse of weakened roof structure. The unburned side is the safer working position.

68. B — Non-combustible structural members protected with fire-resistive materials. Type I fire-resistive construction uses non-combustible materials (typically protected steel or concrete) rated for several hours of fire resistance. High-rise buildings are typically Type I.

69. C — Wood-frame walls and combustible structural members. Type V wood-frame construction uses combustible materials for both load-bearing walls and structural framing. Most modern single-family housing is Type V.

70. A — Failure of a single component can collapse the entire truss. Trusses depend on every component to maintain geometry; failure of a single chord, web, or connector can collapse the entire truss because the load paths are not redundant.

71. B — Five to ten minutes of direct flame exposure. Lightweight engineered wood-truss floor systems may fail within five to ten minutes of direct flame contact because of small dimensional lumber and adhesive-bonded gusset plates that fail rapidly.

72. D — Older commercial buildings with long clear spans. Bowstring trusses are characteristic of older commercial buildings — supermarkets, bowling alleys, automotive shops — where long unobstructed floor space was required without intermediate columns.

73. C — 75 degrees from horizontal at the base. The 75-degree climbing angle is achieved using a 1:4 ratio — the butt is placed 1 foot from the wall for every 4 feet of working height. This angle provides safe climbing without ladder tip-out.

74. D — Five full rungs above the roof edge. A ladder used as a roof access point must extend at least five rungs above the eave to provide a stable handhold for firefighters transitioning between the ladder and the roof.

75. B — Hooks at the upper end that grip the ridge. A roof ladder has retractable hooks at the tip that fold out to grip over a peaked roof ridge, anchoring the ladder against sliding while firefighters operate from it.

76. B — An extension ladder equipped with tormentor poles. A Bangor ladder is a long extension ladder fitted with tormentor (stay) poles that allow the ladder to be raised and stabilized by personnel during the raise.

77. C — Shoulder carry with beam on the shoulder. A single firefighter can carry a 24-foot extension ladder using the shoulder carry, with one beam rested on the shoulder and the ladder balanced fore and aft, leaving one hand free.

78. A — 10 feet from the nearest energized conductor. The minimum approach distance for ground ladder operations near overhead power lines is 10 feet, with greater clearances required for higher-voltage transmission lines.

79. D — Secure the butt against outward movement during climbing. The heel or foot of the ladder is footed by a firefighter or secured by a strap to prevent the butt from kicking out — the most common cause of ground ladder failure.

80. D — Annually and after any suspected damage. NFPA 1932 requires annual service testing of ground ladders, additional testing after any incident that may have damaged the ladder, and any time damage or excessive wear is observed.

81. C — Composite construction with aluminum liners. Modern high-pressure SCBA cylinders are typically composite (carbon-fiber overwrap with an aluminum or polymer liner) to combine high strength with low weight at 4,500 psi service pressure.

82. A — Every three years from date of manufacture. Composite (FRP) SCBA cylinders require hydrostatic testing every three years from the manufacturing date stamped on the cylinder, while steel and aluminum cylinders have longer test intervals.

83. C — Fifteen years from manufacture date. Composite SCBA cylinders have a maximum service life of 15 years from manufacture under DOT special permit. After 15 years they must be removed from service regardless of condition.

84. A — Approximately 30 seconds of no motion detected. The PASS device pre-alarms after about 20 seconds of no motion and full-alarms at about 30 seconds. A firefighter who is motionless from incapacitation or entrapment is detected and announced rapidly.

85. A — Self-contained breathing apparatus with cylinder. SCBA carries its own air supply in a cylinder worn by the user, providing breathing air independent of any external supply. This makes it suitable for IDLH atmospheres of unknown composition.

86. C — Receives breathing air from a remote source through a hose. A supplied-air respirator delivers breathing air through a long hose from a remote source (cylinder cascade or compressor), reducing the burden on the user but limiting mobility.

87. A — Two firefighters to share a single air source briefly. The buddy-breathing or EBSS allows one SCBA to supply air to another wearer through a quick-connect fitting, providing emergency air during a self-rescue or evacuation.

88. D — Be standing by to rescue downed or trapped firefighters. The rapid intervention crew is dedicated solely to firefighter rescue. They are staged and equipped, monitor radio traffic, and do not perform other operational tasks while in the RIC role.

89. B — MAYDAY repeated three times in sequence. MAYDAY is the international distress call and the firefighter standard for indicating immediate personal danger. It is spoken three times to ensure capture on the radio system.

90. C — Name of the firefighter calling the MAYDAY. The "N" in LUNAR is the name of the firefighter calling so that command, RIC, and other crews know exactly which individual is in trouble.

91. B — Assignment of the firefighter at the time of MAYDAY. The "A" in LUNAR is the assignment held by the firefighter (e.g., search, fire attack, ventilation), which gives command information about location, task, and likely operating area.

92. C — Resources needed for rescue from the position. The "R" in LUNAR is the resources required — air, extrication equipment, manpower, or other assistance — that the rescue team should bring when responding.

93. C — The accountability board at the point of entry. The accountability tag is collected at the entry-point accountability board (also called a "passport") so that a known list of who is inside the structure exists at all times.

94. B — Every 15 to 20 minutes during interior operations. A PAR is typically conducted every 15 to 20 minutes during sustained interior operations, after major events (collapse, mayday, change in strategy), and at the conclusion of operations.

95. B — Resource assignments, accountability, and benchmarks. The tactical worksheet captures the resources assigned, their location and task, the accountability state, and the benchmarks (water on the fire, primary all-clear, etc.) achieved.

96. A — Command and the four primary general staff sections. The basic ICS structure consists of the incident commander plus the four primary general staff sections — operations, planning, logistics, and finance/administration — activated as the incident requires.

97. C — Operations, Planning, Logistics, and Finance/Administration. The four primary general staff sections under ICS are Operations, Planning, Logistics, and Finance/Administration. Each is led by a section chief reporting to the incident commander.

98. B — Multiple agencies with jurisdiction must coordinate. Unified Command is used when multiple agencies share jurisdiction over an incident; each agency's representative shares command authority while maintaining a single set of objectives.

99. B — Five to seven subordinates as a maximum. Span of control under ICS is established as three to seven subordinates with five as the optimum. Exceeding seven requires the addition of supervisory layers (groups, divisions, branches).

100. B — A specific geographic area of the incident scene. Divisions are organized by geography — for example, "Division A" might be assigned to the front of the building or "Division 2" to the second floor.

101. C — The functional assignment performed regardless of location. Groups are organized by function — for example, "Search Group" or "Ventilation Group" — and operate across multiple geographic areas as needed.

102. D — Span-of-control limits at the section level are exceeded. Branches are established under a section (typically operations) when the number of subordinate divisions or groups exceeds span-of-control limits, adding a supervisory layer.

103. B — Poses an immediate threat to life or health, or could cause irreversible health effects. An IDLH atmosphere is one that poses immediate or irreversible health threats or impairs escape ability. Smoke-filled structures are presumed IDLH by definition.

104. A — Minimum concentration that will support combustion. The LEL is the minimum vapor concentration in air below which combustion will not occur because there is insufficient fuel. Below the LEL the mixture is too lean.

105. B — Maximum concentration above which combustion will not occur. The UEL is the maximum concentration above which combustion will not occur because the mixture is too rich and lacks sufficient oxygen.

106. C — Oxygen, lower explosive limit, carbon monoxide, and hydrogen sulfide. The standard four-gas monitor used by fire and industrial response measures oxygen, LEL (combustible gas), CO, and H_2S. Additional sensors (HCN, NH_3, others) are added as needed.

107. A — Where contamination is present or suspected to be present. The hot zone surrounds the source of contamination at a hazmat incident. Entry is restricted to personnel in appropriate PPE working under formal procedures.

108. B — Decontamination of personnel and equipment leaving the hot zone. The warm zone contains the decontamination corridor where personnel and equipment leaving the hot zone are processed to remove contamination before entering the cold zone.

109. D — A Class 3 flammable liquid in transport. DOT placards use a number in the corner to indicate the hazard class. A red flame symbol with "3" indicates Class 3 flammable liquids such as gasoline and many solvents.

110. A — An explosive material in transport. Class 1 hazardous materials are explosives, divided into six divisions (1.1 through 1.6) by degree of explosive hazard. Class 1.1 is mass-explosion hazard; Class 1.6 is extremely insensitive.

111. A — The U.S. Department of Transportation. The ERG is published by the U.S. Department of Transportation in cooperation with Transport Canada and the Mexican transport authority, and is distributed free to emergency responders.

112. C — The numbered emergency action guides for response. The orange section of the ERG contains the 60+ numbered guides describing emergency action recommendations, fire response, spill control, and first aid for groups of materials.

113. D — The initial isolation and protective action distances for highlighted materials. The green section of the ERG provides the initial isolation and protective action distances for materials highlighted in the yellow and blue sections (typically toxic-by-inhalation or water-reactive materials).

114. D — Maximum skin, respiratory, and vapor protection. Level A provides the highest combined protection — fully encapsulated vapor-tight suit with self-contained breathing apparatus. It is required when both vapor and skin hazards are unknown or extreme.

115. B — The highest level of respiratory protection with lesser skin protection. Level B provides the highest level of respiratory protection (SCBA) combined with chemical-resistant clothing that is not vapor-tight. It is appropriate when respiratory hazards are high but vapor skin exposure is not the primary concern.

116. A — Chemical, biological, radiological, nuclear, and high-yield explosive devices. WMDs are categorized as CBRNE — chemical, biological, radiological, nuclear, and explosive — covering the full range of mass-casualty weapons under federal definitions.

117. A — Life safety of responders and civilians at the scene. Life safety is the first and overriding priority at every emergency scene. It encompasses the safety of responders and civilians and takes precedence over property and environment.

118. B — Life safety, incident stabilization, property conservation. The standard order of incident priorities is life safety first, incident stabilization second, and property conservation third. Some texts add environmental protection as a fourth priority.

119. A — Reduce property damage from water, smoke, and weather. Salvage operations protect property from secondary damage by the fire department's own work (water, smoke contamination) and by weather (rain through ventilation openings).

120. D — Vinyl-coated synthetic fabric with reinforced edges. Modern salvage covers are heavy-duty vinyl-coated synthetic fabric with reinforced edges and corner grommets, designed for repeated use, decontamination, and folding.

121. C — Locate and extinguish remaining hidden fire. Overhaul searches walls, voids, ceilings, and contents for hidden fire after the main body has been knocked down, to prevent rekindle. Thermal imagers are commonly used to find hot spots.

122. D — Preserved in place for the fire investigator. The point of origin and surrounding evidence should be preserved in place whenever possible until the fire investigator arrives. Overhaul should be deferred or modified around the suspected origin.

123. A — Infrared radiation emitted by all objects with temperature. A TIC detects infrared radiation emitted by all objects above absolute zero and converts it to a visible image showing surface temperature differences. It does not see through walls or smoke.

124. D — To supplement other search methods and confirm conditions. The TIC is a supplement to direct search techniques. It can identify hot spots, locate downed firefighters, and confirm fire location, but does not replace methodical searching by touch.

125. D — It binds to hemoglobin with much greater affinity than oxygen. CO's affinity for hemoglobin is approximately 200 times that of oxygen, displacing oxygen and causing tissue hypoxia even at low ambient concentrations. CO is the leading cause of fire fatalities.

126. A — Nitrogen-containing synthetic materials burn. Hydrogen cyanide is produced when nitrogen-containing materials (polyurethane foam, wool, silk, plastics) burn in oxygen-limited conditions. Modern structure fires routinely produce dangerous HCN concentrations.

127. B — The length times width of the floor area divided by 3. The National Fire Academy formula for required fire flow at a single-family residential structure is (L × W) ÷ 3 = gpm, adjusted for exposures and percentage of involvement.

128. B — About 100 pounds per 100-foot section. A 100-foot length of 5-inch LDH filled with water weighs roughly 100 pounds. Empty 5-inch LDH weighs about 90 pounds per 100-foot section and is the upper limit of one-person handling.

129. A — Part of the fire spreading most rapidly downwind. The head of a wildland fire is the section advancing most rapidly in the direction the wind is driving the flames. It is typically the most dangerous and is approached only with proper safety zones.

130. A — Side parallel to the principal direction of spread. The flanks are the sides of a wildland fire roughly parallel to the principal spread direction. Flanking attacks pinch the head between two crews working the flanks.

131. C — Lookouts, Communications, Escape routes, Safety zones. LCES is the wildland safety mantra: each crew must have posted lookouts, working communications, identified escape routes, and an effective safety zone before engaging.

132. A — Last-resort device when no escape route is available. The wildland fire shelter is deployed only as a last resort when escape to a safety zone is no longer possible. Its purpose is to provide brief survivable shelter from radiant heat.

133. D — Approximately four times the maximum flame length. A safety zone must be at least four times the anticipated flame length in radius to keep crews outside radiant heat lethal distance. Larger zones are required for crown-fire potential.

134. C — A 45-degree angle from the upwind side. Vehicle fires are approached from the upwind side at a 45-degree angle, which keeps responders out of the line of bumper-strut release, fuel-leak run-off, and tire-explosion trajectories.

135. D — Large quantities of water for extended cooling duration. Lithium-ion battery fires in EVs may reignite repeatedly and require sustained water cooling — often thousands of gallons — to bring the battery pack temperature down to safe levels.

136. B — Wide-angle fog stream applied to cool the vessel surface. A flame-impinged propane tank must be cooled with copious water on the vessel walls (especially the vapor space above the liquid level) to prevent BLEVE. Approach is from the side, never from the ends.

137. C — A pressure vessel containing liquid is exposed to flame impingement. A BLEVE occurs when a pressure vessel containing a liquid above its atmospheric boiling point is heated by flame impingement, weakening the metal until it ruptures explosively.

138. A — One-half mile in all directions from the source. The ERG and DOT guidance recommend initial isolation around a fire-involved LP tank of approximately one-half mile in all directions because of BLEVE potential and projectile range.

139. B — Is large enough to enter, has limited means of entry, and is not designed for continuous occupancy. OSHA defines a confined space by three criteria: large enough to enter and perform work, limited entry/egress, and not designed for continuous occupancy.

140. A — Contains or has potential to contain a hazardous atmosphere or hazard. A permit-required confined space additionally contains or could contain a hazardous atmosphere, engulfment hazard, configuration hazard, or other recognized serious safety or health hazard.

141. C — Maintain visual, voice, or tag-line contact between team members. The two-in/two-out team must maintain visual, voice, or physical (tag-line) contact between the interior team and the outside backup. Radio-only contact is not sufficient.

142. B — A Safety Data Sheet (SDS) for each substance present. The OSHA Hazard Communication Standard (29 CFR 1910.1200) requires that an SDS be available for each hazardous chemical at any workplace where it is used or stored.

143. C — Sixteen sections under the GHS format. Under the Globally Harmonized System (GHS) adopted by OSHA, the SDS contains 16 standardized sections covering identification, hazards, composition, first aid, fire, accidental release, handling, exposure, properties, stability, toxicology, ecology, disposal, transport, regulatory, and other information.

144. A — Provide responders with critical information about a property before an incident. Pre-incident plans are developed during routine inspections and walkthroughs to document construction features, water supply, hazards, and contacts so responders are not learning these facts during an emergency.

145. D — Multiple engine companies, truck companies, and chief officers. A high-rise response is significantly larger than a residential response, typically including multiple engines, multiple trucks, a rescue, and several chief officers, reflecting the unique tactical challenges.

146. C — Two floors below the involved fire floor. The fire control floor (sometimes called the staging or attack base) is typically established two floors below the fire to allow safe assembly, hose connection, and SCBA preparation before advance.

147. C — Approximately 150 feet of 2½-inch hose with a smooth-bore nozzle. The standard high-rise hose pack contains roughly 150 feet of 2½-inch hose with a smooth-bore nozzle (or low-pressure fog), gated valve, and necessary fittings for standpipe operations.

148. A — Restricted to firefighter use under Phase II recall, never above the fire floor. Elevator use during a high-rise fire is restricted to firefighter operation under Phase II recall, and elevators must not be taken to floors at or above the fire because of smoke and shaft hazards.

149. C — A smoke detector activates in an elevator lobby or machine room. Phase I recall is initiated by smoke detection in elevator lobbies, machine rooms, or hoistways, returning all cars to the designated recall floor (usually the lobby) for life safety.

150. C — Manual override by firefighters with the elevator key. Phase II operation allows firefighters with the FEO key to manually control the elevator from inside the car, including selecting floors, opening doors, and recalling the car for evacuation.