PRACTICE EXAM 13: FIREFIGHTER I & II SIMULATION (150 QUESTIONS)

1. A fire department's dispatcher receives a 911 call reporting smoke alarms sounding in a residential structure. The most critical information the dispatcher must obtain from the caller is:

A. The make and model of the smoke alarms that are currently sounding in the residence

B. The exact street address and any callback number for the reporting party to use

C. The age of the home and the type of construction materials used in its construction

D. The names of all occupants who are currently inside or near the structure

2. The annual SCBA flow test is performed to verify:

A. The regulator delivers proper airflow rates at varying ambient and demand conditions

B. The harness straps meet the original manufacturer's tensile strength specifications

C. The facepiece lens is free of any visible scratches that may impair the user's vision

D. The PASS device produces an alarm at the proper decibel level measured externally

3. A firefighter notes that smoke is being drawn back into a structure through gaps around a closed door. This observation suggests:

A. The fire is fully developed and has spread to multiple compartments inside the structure

B. Ventilation is working effectively and the fire is being driven out the opposite side

C. The fire has been extinguished by interior crews and overhaul has begun in the area

D. The fire is consuming oxygen rapidly and the compartment has become ventilation-limited

4. A roof showing signs of "saw-toothing" or sagging between rafters during a working fire indicates:

A. The roof was poorly constructed and is failing due to age rather than fire damage

B. The roof decking has lost integrity and is sagging between heat-weakened roof supports

C. Snow load on the roof has exceeded the design capacity for the structural members

D. Sprinkler activation has saturated the decking and added weight beyond design limits

5. The "thermal protective performance" (TPP) rating of structural firefighting turnout gear measures:

A. The maximum temperature the outer shell can withstand before catastrophic combustion

B. The number of laundering cycles the gear can endure before replacement is required

C. The combined insulating capability of the outer shell, moisture barrier, and thermal liner

D. The reflective properties of the trim used on the gear for nighttime visibility outdoors

6. The "remote pressure gauge" displayed on the SCBA chest strap allows the firefighter to:

A. Monitor cylinder pressure without having to look at the gauge mounted on the cylinder itself

B. Communicate with command via wireless transmission of pressure data automatically

C. Override the low-pressure alarm during interior operations when conditions warrant

D. Test the cylinder pressure remotely during the daily equipment check process

7. The "fire plume" above a free-burning fire is best described as:

A. The visible flames produced by the combustion of solid fuels in a compartment

B. The smoke generated by incomplete combustion of synthetic materials in furniture

C. The rising column of hot gases, smoke, and entrained air above the burning fuel

D. The horizontal extension of fire along the ceiling produced during rollover conditions

8. A "fire wall" differs from a "fire partition" in that a fire wall:

A. Has a fire-resistance rating of at least 1 hour, while a fire partition has none required

B. Is constructed of masonry materials, while a fire partition uses gypsum board materials

C. Contains protected openings, while a fire partition allows unprotected wall openings

D. Provides structural separation that can stand even if the structures on either side collapse

9. The common departmental policy for the maximum service life of life safety rope, even without obvious damage, is:

A. 5 years from the date of manufacture if stored in a controlled environment

B. 10 years from the date of manufacture under most fire service service-life policies

C. 15 years from the date of manufacture with annual documented inspections

D. 20 years from the date of manufacture with no significant load history

10. A "load-releasing hitch" used in technical rescue allows the rescuer to:

A. Tie off a rope quickly without requiring any tools or carabiners on the system

B. Hold two ropes together temporarily during a high-angle rescue operation

C. Gradually transfer or release a load from a tensioned rope without losing total control

D. Lock off the rope to free the rescuer's hands during patient packaging activities

11. The most important inspection point for a ground ladder following each use is:

A. The condition of the rungs, beams, and locks for visible damage or bending

B. The compliance of the ladder with the current NFPA 1932 manufacturer's specifications

C. The serial number stamped on the lower beam matches the records on the apparatus

D. The reflective tape applied to the beams is intact and providing adequate visibility

12. The "K tool" used in through-the-lock forcible entry is paired with which other tool?

A. A flathead axe used to strike the K tool deeper into the lock for added depth

B. A halligan tool used to provide leverage during the cylinder removal process

C. A claw tool used to grip the cylinder after the K tool has loosened it from the door

D. A key tool inserted into the exposed lock mechanism after cylinder removal occurs

13. The "thermal imaging camera" (TIC) is most useful during search operations because it:

A. Detects gas leaks and concentrations through walls without disturbing the structure

B. Detects temperature differences between objects, revealing victims, hot spots, and structural features

C. Allows the firefighter to see through walls and identify victims trapped behind obstacles

D. Detects chemical concentrations in the atmosphere that may pose toxic hazards to the crew

14. The "ventilation-induced flashover" phenomenon occurs when:

A. Ventilation introduces oxygen to a fuel-rich, oxygen-limited compartment, triggering rapid fire growth

B. Mechanical ventilation fans push smoke and heat into uninvolved compartments of the structure

C. Vertical ventilation through the roof is performed too early in the incident timeline

D. Horizontal ventilation through windows creates a flow path that draws fire across the room

15. A "double jacket" fire hose differs from a "single jacket" hose in that it has:

A. Two separate water passages allowing two different flow rates simultaneously from one hose

B. A larger inside diameter providing greater flow capacity than single-jacket equivalents

C. Two layers of woven jacket material around the inner liner, providing improved durability

D. A heavier rubber outer covering that prevents abrasion damage during deployment of the line

16. The "available fire flow" from a hydrant is determined by:

A. The size of the water main supplying the hydrant divided by 100 gpm per inch of pipe

B. The color coding painted on the hydrant bonnet according to NFPA 291 standards

C. The maximum flow possible at zero residual pressure during a full flow test situation

D. The flow at the desired residual pressure (typically 20 psi) calculated from a flow test

17. A "constant gallonage" fog nozzle:

A. Adjusts the orifice automatically to maintain a constant nozzle pressure across varying flows

B. Allows the operator to select from preset flow rates by rotating a selector ring on the nozzle

C. Delivers a fixed flow rate at its rated nozzle pressure with no adjustment available

D. Combines straight stream and fog patterns into a single discharge for versatile use

18. A "blitz attack" using a master stream device is most appropriate when:

A. A heavy fire involves a large area or significant exposure that requires rapid knockdown

B. The fire is in a single residential bedroom and crews are preparing for interior attack

C. The structure is fully involved and crews are preparing to abandon the building entirely

D. The fire involves contents only with no structural involvement of the building yet

19. The most efficient way to remove smoke odor from a residential structure after fire suppression is to:

A. Apply commercial deodorizer chemicals to all surfaces within the affected rooms

B. Open windows and doors and use mechanical ventilation to exchange air with outdoors

C. Allow the structure to air out naturally over several days without intervention

D. Apply heavy-duty ozone generators throughout the structure for at least 48 hours

20. During overhaul, "pulling" a ceiling refers to:

A. Removing the entire ceiling assembly to expose the floor or roof framing above

B. Lowering the ceiling temperature by applying water from above to cool the assembly

C. Using a pike pole or hook to open ceiling material and check for fire extension

D. Documenting the location of all sprinkler heads that activated during the fire event

21. A "tactical channel" on the fire department radio system is used for:

A. Communication between dispatch and responding units during the en-route phase

B. Communication between units operating on the fireground at the same incident

C. Communication between fire department and other agencies during mutual aid response

D. Long-distance communication between units operating in different geographic areas

22. A "Class A" fire alarm system circuit:

A. Operates on direct current power only and cannot use alternating current supplies

B. Uses a single conductor pair with all devices connected in parallel at each point

C. Is the simplest type of system requiring minimal supervision of the conductors used

D. Uses a circuit that returns to the panel after passing through all devices, providing fault tolerance

23. The "design density" of a sprinkler system is expressed as:

A. Gallons per minute per square foot of floor area protected by the system installation

B. Total flow in gallons per minute available from the sprinkler system supply main

C. Heat-release rating of the sprinkler heads in BTU per minute at full activation

D. Pressure at the system riser when the design flow is delivered to remote heads

24. The "platform" or "third door" cut in vehicle extrication creates:

A. Access to the engine compartment by cutting away the front of the vehicle's hood

B. A large opening in the side of the vehicle by removing both doors and the B-post

C. A platform for the patient to be transferred onto during the removal process

D. An access opening in the rear quarter panel for patients pinned in the back seat area

25. The "anchor point" in wildland firefighting is:

A. The location where the incident commander has set up the command post for the operation

B. The point of attack where the first crew engages the active fire perimeter directly

C. The drop point for retardant from aircraft operating in support of ground crews

D. A safe location from which a fire line is constructed, such as a road or burned area

26. A "primary survey" of a trauma patient identifies and addresses:

A. The full set of vital signs including heart rate, blood pressure, and respiratory rate

B. The mechanism of injury based on the patient's history and physical surroundings

C. Life threats including airway, breathing, circulation, disability, and exposure (ABCDE)

D. The patient's medications, allergies, and past medical history through interview

27. The use of a "tourniquet" on a bleeding extremity is indicated when:

A. The bleeding is venous and slow but persistent despite direct pressure application

B. Life-threatening arterial bleeding cannot be controlled by direct pressure on the wound

C. The patient is unconscious and direct pressure cannot be maintained reliably by the rescuer

D. The injury occurred in a remote location where transport will exceed 30 minutes total

28. The "emergency response planning" guideline used by hazmat responders includes:

A. The DOT Emergency Response Guidebook used to identify hazards and initial response actions

B. The NFPA 704 placard system that provides hazard identification at fixed facilities only

C. The MSDS sheets carried by every truck transporting hazardous materials interstate

D. The local emergency planning committee directory of authorized contractors

29. A "shipping paper" for a hazardous material transported by truck must include:

A. Only the proper shipping name of the material being transported in the vehicle

B. Only the four-digit UN number assigned to the specific material in the shipment

C. Only the hazard class number that matches the placard displayed on the vehicle

D. The proper shipping name, hazard class, UN number, packing group, and quantity

30. A "char depth" measurement during fire investigation helps identify:

A. The age of the building based on the rate of wood consumption during normal use

B. The total fuel load that was consumed during the fire event in the affected room

C. Areas where the fire burned longest or hottest, helping locate the area of origin

D. The chemical composition of any accelerant used by the person who started the fire

31. The "pre-incident plan" symbol used on a building diagram for a fire department connection is:

A. A standardized symbol from NFPA 170 such as a circle with letters "FDC" inside it

B. A custom symbol developed by the local fire department for internal use only

C. A symbol indicating the building's primary water shutoff valve location on the diagram

D. A symbol marking the location of the fire alarm panel inside the protected structure

32. The "expansion ratio" of a foam concentrate refers to:

A. The percentage of the foam concentrate in the final mixed foam solution

B. The ratio of finished foam volume to the volume of foam solution used to produce it

C. The maximum pressure the foam solution can withstand at the discharge nozzle

D. The percentage of air introduced into the foam solution at the nozzle during use

33. The "net pump pressure" (NPP) is calculated by:

A. Subtracting the intake pressure from the discharge pressure at the pump panel

B. Adding the discharge pressure to the intake pressure to find total system output

C. Multiplying the pump's rated capacity by the operating speed in revolutions per minute

D. Dividing the pump's discharge by the number of attack lines flowing simultaneously

34. The "smoke" produced by a structure fire contains all of the following EXCEPT:

A. Pure oxygen released by the chemical decomposition of synthetic furnishings burning

B. Carbon monoxide produced by incomplete combustion of carbon-based materials in the fire

C. Hydrogen cyanide produced by burning nitrogen-containing materials in furniture

D. Particulate matter suspended in the heated gases rising from the burning fuel package

35. A "truss-loft" or attic space above a finished ceiling poses a particular hazard because:

A. The space is typically inaccessible during fire operations and cannot be ventilated

B. The space is heated by the sun and reaches temperatures that ignite roof framing

C. The lightweight construction always uses chipboard that ignites instantly when heated

D. Fire can spread rapidly through the space, undetected, and weaken structural members

36. The "interface area" of a structural firefighting ensemble refers to:

A. The boundary between the firefighter and the surrounding environment during operations

B. Locations where two pieces of gear meet (such as coat-pant overlap or hood-helmet edge)

C. The thermal liner connections that join the inner shell to the outer protective fabric

D. The communication port on the SCBA facepiece used for radio integration features

37. A "Universal Emergency Breathing Safety System" (UEBSS) connection on an SCBA allows:

A. Two different brands of SCBA to share information about each user's cylinder pressure

B. The user to communicate verbally through the facepiece without removing it for clarity

C. Two SCBAs from different manufacturers to share air through a standardized fitting

D. The user to override the cylinder pressure alarm during extended interior operations

38. A "prusik hitch" tied around a static rope is used to:

A. Permanently anchor the static rope to a fixed object for the duration of the operation

B. Join the static rope to a piece of webbing for an improvised seat harness rapidly

C. Mark a location on the rope where a previous load was applied during the incident

D. Provide a friction grip that can slide along the rope when unloaded but holds when loaded

39. The "Munter hitch" tied with a carabiner is most commonly used to:

A. Anchor a rope to a fixed object with maximum holding power for technical rescue

B. Lower a load with controlled friction when a mechanical belay device is not available

C. Connect two ropes of equal diameter for an extended rappel down a tall structure

D. Tension a rope between two anchor points to create a horizontal traverse line for crossing

40. A "leg lock" used on a ground ladder allows the firefighter to:

A. Lock the climbing position so other firefighters cannot climb the same ladder simultaneously

B. Prevent the ladder from sliding sideways during operations on uneven ground surfaces

C. Free both hands while remaining secured on the ladder at an upper position during work

D. Adjust the climbing angle of the ladder by locking the position of the fly section halyard

41. The "shove knife" tool is used to:

A. Cut through metal padlocks and chains during forcible entry operations at gates

B. Open locked windows by sliding between the sash and the frame to disengage the lock

C. Pry the doorjamb from the strike plate during inward-opening door forcible entry attempts

D. Defeat residential door latches by passing it between the door and jamb to retract the latch

42. The "hook and irons" carry method is used by:

A. The truck company member responsible for forcible entry, who carries a halligan, flathead axe, and pike pole or hook

B. The engine company member who is responsible for stretching the attack line to the fire location

C. The driver/operator of the engine, who carries the appliances needed for water supply operations

D. The chief officer, who carries communication equipment and the incident command worksheet

43. The "package and remove" method during a downed firefighter rescue involves:

A. Wrapping the downed firefighter in a salvage cover for thermal protection during removal

B. Cutting off the firefighter's SCBA harness to reduce weight during the drag to safety

C. Securing the firefighter's SCBA, securing webbing or DRD for handles, then moving rapidly toward egress

D. Disconnecting all radios and accessories from the firefighter before initiating any drag

44. A "PASS" device worn by every firefighter on the fireground is required to:

A. Transmit GPS location data to the incident commander every 30 seconds automatically

B. Provide a verbal warning of low SCBA air pressure when the cylinder reaches 33 percent

C. Communicate with the firefighter's partner through wireless radio frequency signal

D. Activate automatically after a preset period of motionlessness, providing an audible alarm

45. The "ventilation hole" cut during vertical roof ventilation should be sized to:

A. Match the size of the building's main entry door to maintain equivalent flow paths

B. Be a minimum of 4 feet by 4 feet to provide adequate area for heat and smoke release

C. Be approximately 1 percent of the floor area of the structure being ventilated below

D. Be no larger than 2 feet by 2 feet to maintain structural integrity of the roof system

46. The "trench cut" is differentiated from a "strip cut" by:

A. The trench cut is made parallel to the roof ridge, while the strip cut runs perpendicular

B. The trench cut is performed with a chain saw, while the strip cut uses a rotary saw exclusively

C. The trench cut is a defensive ventilation tactic to stop horizontal fire spread, while the strip cut releases heat

D. The trench cut is made over the seat of the fire, while the strip cut is made far from any involvement

47. A "Storz" coupling differs from a "threaded" coupling in that it:

A. Has a much higher pressure rating making it suitable for high-rise standpipe operations

B. Is made of brass while threaded couplings are typically constructed of aluminum alloy

C. Is used only on supply hose, never on attack hose lines deployed by engine companies

D. Connects by aligning lugs and rotating a quarter turn rather than threading together

48. The "available water" at a hydrant flow test is calculated using:

A. The Hazen-Williams formula or other empirical methods based on flow test pressures

B. The Bernoulli equation applied to the pressure differential between hydrants tested

C. The Manning equation applied to the open-channel flow characteristics of the supply main

D. The Darcy-Weisbach equation applied to the friction loss within the hydrant body itself

49. The "reach" of a fire stream is defined as:

A. The maximum horizontal distance the stream can be projected from a fixed nozzle position

B. The distance the stream can be projected effectively while maintaining its pattern and effectiveness

C. The depth of penetration into a fuel package achieved by the stream at point of impact

D. The diameter of the stream pattern at the point where it impacts the target surface

50. The "indirect attack" method using fog streams from outside the structure works primarily by:

A. Cooling the burning fuel directly with water droplets that penetrate the flame zone

B. Pushing the fire toward a ventilation opening using the force of the water stream

C. Converting water to steam in the heated atmosphere, absorbing heat and smothering the fire

D. Diluting the fuel vapors in the compartment until they fall below the lower flammable limit

51. The "two-in/two-out" rule under OSHA 1910.134 applies during:

A. Interior structural fire suppression operations in atmospheres immediately dangerous to life and health

B. Any incident response, including medical calls, vehicle accidents, and outside fires

C. Only training exercises conducted by the fire department in live fire training facilities

D. Only operations where the incident commander has specifically activated the rule for that scene

52. The "balloon throw" salvage cover deployment technique:

A. Uses one firefighter throwing the cover into the air to allow it to settle on the contents

B. Requires three firefighters to inflate the cover before placing it over the protected items

C. Uses a folded cover that one firefighter unrolls across the floor of the affected room

D. Uses two firefighters to throw the partially unfolded cover over contents in a controlled motion

53. "Rekindle" is best prevented during overhaul by:

A. Spraying foam over all suspected areas of fire involvement before leaving the scene

B. Thoroughly examining concealed spaces and ensuring all fire has been completely extinguished

C. Posting a fire watch at the scene for at least 24 hours after fire suppression is complete

D. Returning to the scene every hour for the first 8 hours to monitor for any signs of fire

54. The most important reason to use plain language rather than 10-codes on the fireground radio is to:

A. Ensure that all responders, including those from mutual aid agencies, clearly understand the communication

B. Reduce the total time spent on the radio during operations for better airtime efficiency

C. Comply with FCC regulations regarding emergency service radio communications standards

D. Match the standards used by law enforcement agencies operating in the same general area

55. A "smoke control system " in a high-rise building functions by:

A. Activating all sprinkler heads simultaneously upon detection of any smoke in the building

B. Closing all doors throughout the building to compartmentalize fire spread automatically

C. Sounding alarms only on the affected floor to prevent unnecessary evacuation of others

D. Pressurizing stairwells and using fans to direct smoke away from occupants and exits

56. A "Class II" standpipe system is intended for use by:

A. Trained firefighters with 2.5-inch hose connections at each floor of the building

B. Both occupants and firefighters with both 1.5-inch and 2.5-inch connections available

C. Building occupants only, with preconnected 1.5-inch hose stored in cabinets at each level

D. Maintenance personnel only during scheduled testing of the system risers each year

57. The "main drain test" of a wet-pipe sprinkler system measures:

A. The water supply pressure at the system before and during a controlled discharge through the drain

B. The flow rate through each individual sprinkler head when the system is fully activated

C. The drainage time required to empty the system after maintenance has been performed

D. The pressure rating of the main control valve under static and flowing conditions

58. The "PAB" or "Pretensioned Anchor Belt" component in modern vehicles must be considered during extrication because it:

A. Contains explosive components that can discharge if struck by extrication tools during operations

B. Tensions the seatbelt prior to impact and can release stored energy unexpectedly during cutting

C. Provides additional anchoring for the rear seats and complicates patient removal procedures

D. Activates the airbag system from a different sensor than the front-mounted impact sensors do

59. The most appropriate tool for cutting a hardened steel anti-intrusion beam in a vehicle door is:

A. A bolt cutter applied with mechanical advantage at the center of the beam between the doors

B. A pickhead axe used to chisel through the beam with sledgehammer strikes from another firefighter

C. A reciprocating saw with a wood-cutting blade applied at an angle to the beam at door level

D. Hydraulic cutters or a specialized rescue tool designed for cutting hardened steel components

60. The "drop point" in a wildland fire operation is:

A. The location where aircraft drop retardant on the unburned fuels ahead of the fire front

B. The location where firefighters dropped equipment when escaping from an entrapment

C. A designated location where supplies and equipment are dropped off for crews working remote fire lines

D. The location where a fire transitions from a ground fire to a crown fire in the canopy

61. The "ABC" approach in patient assessment refers to:

A. Assessment, Breathing, Circulation as the first three priorities in trauma care management

B. Airway, Breathing, Circulation as the priorities of basic life support and trauma care assessment

C. Awareness, Breathing, Circulation as the steps to maintain in conscious patient assessment

D. Airway, Bleeding, Circulation as the priorities for hemorrhage control and patient stabilization

62. A patient experiencing a possible heat stroke presents with:

A. Cool, moist skin; rapid weak pulse; nausea; and dizziness during exertion in heat

B. Cool, dry skin; slow strong pulse; and fully alert mental status during heat exposure

C. Warm, moist skin; slow regular pulse; and complaints of thirst with normal mental status

D. Hot, dry or moist skin; altered mental status; and rapid pulse with high body temperature

63. The "DECIDE" decision-making process used in hazmat response begins with:

A. Detect the presence of hazardous materials at the scene through observation and identification

B. Don the appropriate level of personal protective equipment before any further action

C. Determine the chemical composition through the use of monitoring and detection equipment

D. Define the operational boundaries of the hot, warm, and cold zones at the incident scene

64. The "shipping paper" location on a truck transporting hazardous materials is:

A. Inside the engine compartment behind the driver's seat for easy emergency access

B. Within reach of the driver while operating the vehicle, such as on the driver's seat or door pocket

C. In a locked compartment in the trailer with a key accessible only to the dispatcher

D. Affixed to the outside of the trailer next to the hazard placard on the right side

65. "Spalling" of concrete during a fire investigation indicates:

A. The presence of an accelerant directly applied to the surface before the fire was ignited

B. Cold-weather damage to the concrete from freeze-thaw cycles occurring after the fire

C. Localized high temperatures that caused trapped moisture in the concrete to expand and fracture

D. The use of substandard concrete materials in the original building construction

66. A "V-pattern" identified during fire investigation typically indicates:

A. The point or area of origin, with the bottom of the V near the heat source

B. The direction of fire travel through the structure from compartment to compartment

C. The use of an accelerant traced along the flooring of the affected room

D. A backdraft event that occurred during the development of the fire in the room

67. The "pre-incident plan" should include exterior building features such as:

A. Only the location of the main entrance used during normal business operations of the property

B. Building access points, fire department connections, hydrants, and exterior hazards

C. Only the building's street address and primary phone number for the responsible party

D. Only the building's height and number of floors for the apparatus positioning planning

68. The "fluoroprotein" Class B foam is composed of:

A. Synthetic detergents only, with no animal-derived protein components in the formulation

B. Aqueous film-forming agents combined with fluorinated surfactants for vapor suppression effects

C. Hydrolyzed protein concentrate with fluorinated surfactants to enhance fuel resistance and flow

D. Class A wetting agents combined with antifreeze compounds for cold weather applications

69. The "knockdown time" of a Class B foam application refers to:

A. The total time required to apply foam over the entire fuel surface during the operation

B. The time foam remains stable on the fuel surface before breaking down and requiring reapplication

C. The percentage of foam concentrate required to suppress the fire at the specified rate

D. The time from the start of foam application until visible flames are extinguished on the fuel

70. The "relief valve" on a fire pump is designed to:

A. Stop water flow to the discharge when the pump exceeds its maximum operating temperature

B. Discharge excess water from the pump tank when the system pressure exceeds capacity

C. Open and divert water from the discharge side back to the intake when pressure exceeds a set point

D. Drain the pump completely when the apparatus is being placed back in service after use

71. The "Smoke Reading" technique developed by Dave Dodson teaches firefighters to interpret:

A. Smoke volume, velocity, density, and color to predict fire behavior and conditions inside

B. The exact temperature of the fire compartment based on the color of smoke produced

C. The chemical composition of the smoke to identify the type of fuel that is burning

D. The location of the seat of the fire by tracing smoke patterns back to their source

72. The "thermal balance" in a compartment fire is maintained when:

A. Hot gases at the ceiling and cool air at the floor are intentionally mixed by ventilation

B. The fire crews avoid using any water on the fire to prevent steam production in the space

C. The compartment is fully sealed to prevent any oxygen from entering during operations

D. Hot gases remain layered above and cool air remains at floor level, preserving the natural strata

73. A "fire-resistance rating" of 2 hours assigned to a wall assembly means:

A. The wall has been tested and will not burn for 2 hours under any conditions

B. The wall has been tested to maintain its structural integrity and fire-blocking function for 2 hours under standard test conditions

C. The wall will completely prevent fire spread to the adjacent occupancy for 2 hours under any conditions

D. The wall has been certified to resist water damage for 2 hours during sprinkler discharge

74. A "rated assembly" (such as a fire-rated door) maintains its rating only when:

A. All components, including the door, frame, hardware, and seals, are intact and functioning together

B. The door has been replaced with a new one matching the original manufacturer's specifications

C. The frame is recently inspected and certified by the building's fire alarm vendor annually

D. The door is held open by an approved smoke detector-activated closure device throughout

75. The identification placed on the back of the turnout coat should display:

A. The wearer's home address and emergency contact information for after-shift purposes

B. The wearer's full Social Security number and birth date for identification during incidents

C. The wearer's payroll information and shift schedule for administrative tracking purposes

D. The wearer's last name, first initial, and identifying agency or station number for accountability

76. The "decon zone" established at the scene of a fire is used to:

A. Decontaminate civilians who have been exposed to smoke during the fire incident

B. Decontaminate firefighters and gear from carcinogens and combustion byproducts at the scene

C. Decontaminate apparatus by washing the exterior before returning to the station

D. Decontaminate hose and equipment used during the fire before reloading on the apparatus

77. The "skip breathing" technique used during emergency air conservation involves:

A. Breathing only every third breath cycle to extend the air supply during emergencies

B. Holding the breath for as long as possible between inhalations to slow air consumption

C. Inhaling normally, holding briefly, then exhaling slowly to extend the cylinder duration

D. Removing the facepiece briefly to test the surrounding atmosphere for breathable air

78. A "personal escape rope" worn by an interior firefighter must comply with:

A. NFPA 1981 standards for self-contained breathing apparatus including escape requirements

B. NFPA 1971 standards for structural firefighting protective ensemble configurations

C. NFPA 1936 standards for fire department vehicle apparatus and equipment carried

D. NFPA 1983 standards for life safety rope and equipment used in emergency services

79. A "single bowline" tied around a firefighter for emergency lowering should be:

A. Made of utility rope of any diameter for one-time emergency use only in extremis

B. Backed up with a safety knot (such as an overhand) to prevent the bowline from working loose

C. Combined with a clove hitch around the chest for additional security during the lowering

D. Tied directly to the SCBA harness to use the harness as the load-bearing connection point

80. The "tip load" rating of a ground ladder is:

A. The maximum weight that can be applied at any point along the length of the ladder

B. The maximum weight the ladder can support when fully extended and resting on the ground

C. The maximum weight that can be applied at the tip end of the ladder while it rests against a structure

D. The weight of the ladder itself, including all fittings, halyards, and accessories

81. The "tap and gap" technique for forcible entry on an inward-opening door involves:

A. Striking the lock cylinder repeatedly until the entire mechanism breaks free from the door

B. Tapping the door at the hinge side first to verify which way the door opens before entry

C. Tapping the irons (halligan and axe) together to gap the door, exposing the locking mechanism

D. Gapping the door with a wedge first, then striking the locking bolt to release the bolt

82. The "hydra-ram" is a forcible entry tool that:

A. Uses hydraulic power generated by a hand pump to spread the door from its frame for entry

B. Combines a halligan tool with a hydraulic spreader on the adz end for combination use

C. Uses pressurized air from a portable cylinder to drive the door from its hinges automatically

D. Generates electrical current to demagnetize electromagnetic locking devices on commercial doors

83. The "VEIS" (Vent-Enter-Isolate-Search) tactic was developed to:

A. Replace the conventional search by providing a faster method for all interior searches

B. Reduce firefighter exposure to heat by performing all searches from the exterior of the building

C. Comply with NFPA 1500 requirements for interior search during structural fire fighting

D. Conduct targeted searches of specific rooms for known or likely victims when interior conditions are severe

84. The "primary search" is conducted:

A. Only after the fire has been completely extinguished and conditions have stabilized for safety

B. As rapidly as possible while fire conditions still threaten the occupants of the structure

C. By a single firefighter to maximize the area covered in the shortest possible time

D. Only when the incident commander specifically orders it after a confirmed report of victims

85. "Hydraulic ventilation" using a fog stream directed out a window:

A. Is more effective than positive pressure ventilation in all structures regardless of size

B. Uses approximately 100 gallons of water per minute to clear a residential structure

C. Uses the entrainment effect of the water stream to draw smoke from the room through the window

D. Should only be used after positive pressure ventilation has failed to clear the space

86. A "negative pressure ventilation" approach uses:

A. Smoke ejector fans positioned at an exhaust opening to draw smoke out of the structure

B. Pressurized water sprayed through floors to push smoke down and out of the structure

C. The natural convection currents created by the fire to move smoke upward through openings

D. Closed-circuit ventilation systems built into the structure for smoke evacuation purposes

87. The "shoulder load" method for carrying hose involves:

A. Two firefighters placing the hose across their shoulders together for a long stretch deployment

B. Placing the hose roll vertically across one shoulder with the couplings facing the front

C. Coiling the hose around the shoulder in a circular pattern for easy deployment at the fire

D. Folding the hose so it can be carried in loops over the shoulder, paying out as the firefighter walks

88. The "horseshoe" hose load is characterized by:

A. A flat configuration with the hose folded in layers on top of one another in the hose bed

B. A spiral arrangement coiled tightly into a circular pattern for maximum storage capacity

C. The hose loaded along the perimeter of the hose bed forming a U-shape with the couplings exposed

D. A vertical arrangement with each fold leaning against the previous one across the entire bed

89. The "fire flow" requirement for a residential structure under 3,000 square feet is typically:

A. 250 gallons per minute regardless of construction type, materials, or any exposure factors

B. 500 gallons per minute under standard ISO and NFPA 1142 calculations for residential occupancy

C. 1,000 gallons per minute due to the rapid fire growth in modern furnished residential interiors

D. 1,500 gallons per minute to provide adequate margin for unforeseen exposures or fire growth

90. A "fog stream" produced by a fog nozzle is most effective for:

A. Reaching deep-seated fires through walls and ceilings without disturbing thermal balance

B. Producing the longest stream reach for exterior defensive operations on large structures

C. Absorbing heat from a heated atmosphere and protecting firefighters from radiant heat exposure

D. Concentrating water on a specific small target such as a single burning fuel package

91. A "constant pressure" automatic nozzle maintains:

A. A constant flow rate regardless of pressure changes from the pump operator at the apparatus

B. A constant stream pattern from straight stream to wide fog automatically based on conditions

C. A constant cone angle when the operator changes the flow rate using the bumper ring

D. A constant nozzle pressure (typically 100 psi) by adjusting the orifice across a range of flows

92. The three traditional tactical priorities of fire ground operations are:

A. Life safety, incident stabilization, and property conservation as the priority hierarchy

B. Rescue, exposure protection, and extinguishment as the primary tactical focus areas

C. Size up, attack, and ventilation as the sequential phases of fireground operations

D. Communication, coordination, and control as the principles of incident management

93. A "rescue profile" of a structure refers to:

A. The dimensions of the building including its height, width, and depth for tactical planning

B. The likelihood that occupants are present and in need of rescue based on type, time, and conditions

C. The construction profile rating of the building under the local building code requirements

D. The profile view of the structure used during the initial size-up by the first arriving officer

94. The "delayed" salvage cover technique is appropriate when:

A. Salvage operations are postponed until after all fire suppression activities have concluded

B. Salvage covers are deployed only after primary search is complete throughout the structure

C. The covers are pre-positioned at the structure during pre-incident planning visits

D. Suppression water has already begun to spread before covers can be properly deployed, requiring water channeling techniques

95. The "hot wash" or "rinse" of contaminated turnout gear performed at the scene serves to:

A. Sanitize the gear for the next firefighter who may need to use it during the same shift

B. Verify the gear meets the requirements for thermal protective performance after exposure

C. Remove the bulk of combustion contaminants before transport back to the station for further cleaning

D. Inspect the gear for thermal damage that may have occurred during the recent fire response

96. The "incident command system" (ICS) requires:

A. Establishment of unified command in a clear chain of authority with manageable span of control

B. Operation under a single agency's authority regardless of mutual aid involvement at the scene

C. The most senior officer present always assume command throughout the duration of the incident

D. Use of 10-codes by all responders to maintain consistency across multiple agency operations

97. A "manual pull station" mounted in a building's egress path is:

A. Required to be unlocked at all times even when the building is closed for security

B. Designed to be locked during business hours to prevent malicious activation by visitors

C. Limited to use only by trained employees of the property during fire emergencies

D. Located at exit doors and along egress paths so occupants can manually initiate the alarm system

98. A "deluge sprinkler system" is most commonly installed in:

A. Residential occupancies where rapid response to small fires is required by codes

B. Light hazard occupancies such as offices, schools, and churches that meet NFPA standards

C. High-hazard occupancies such as aircraft hangars and chemical processing facilities for total flooding

D. Cold storage warehouses where freezing temperatures preclude the use of wet-pipe systems

99. The "stages" of vehicle extrication are typically:

A. Arrival, stabilization, glass removal, and patient extraction as the four primary phases

B. Scene size-up, stabilization, access, disentanglement, removal, and termination as the standard phases

C. Patient assessment, vehicle assessment, hazard control, and extraction as the four primary phases

D. Approach, secure, extract, and transport as the standard four-step process for any incident

100. The "B-post" of a passenger vehicle is also referred to as the:

A. Front cantilever supporting the windshield and providing structural support to the roof front

B. Rear support pillar located behind the rear seats supporting the roof and trunk lid hinges

C. Center pillar between the front and rear doors providing structural support and seatbelt mounting

D. Side rail running between the A-post and C-post supporting the roof rails between pillars

101. The "downhill firefighting" guidelines in wildland firefighting include:

A. Specific rules for firefighters operating downhill from a fire because the fire can rapidly run uphill toward them

B. Specific equipment required for firefighters working on slopes greater than 30 degrees

C. Requirements for aerial support only during night operations when ground crews cannot work safely

D. Restrictions on the use of bulldozers downhill from active fire on any wildland fire

102. The "AVPU" scale used to assess a patient's level of consciousness stands for:

A. Awareness, Verbal response, Pulse, Urgency in patient assessment of consciousness levels

B. Alert, Verbal response, Painful stimulus response, Unresponsive as the four levels assessed

C. Anxiety, Vital signs, Pupils, Urination as the four checks for neurological function

D. Airway, Ventilation, Pulse, Unconscious as the four basic assessments of patient status

103. A patient with a suspected spinal injury should be:

A. Placed in the recovery position with the head supported by a folded blanket during transport

B. Allowed to sit up if the position is comfortable and no neurological deficits are observed

C. Asked to walk to the ambulance to verify motor function before any transport begins

D. Manually immobilized in a neutral in-line position until full spinal motion restriction is established

104. The "warm zone" at a hazmat incident:

A. Contains the decontamination corridor between the hot zone and the cold zone for personnel exiting

B. Contains the command post, staging area, and rehab area for support of operations

C. Contains the area of contamination where the release has occurred and entry requires full PPE

D. Contains the area immediately outside the building perimeter where civilians may safely gather

105. The "PEL" (Permissible Exposure Limit) of a hazardous substance refers to:

A. The maximum dose a person can receive before symptoms of acute exposure appear suddenly

B. The lethal dose required to cause death in 50 percent of test animals exposed in laboratory studies

C. The maximum concentration to which a worker may be exposed for an 8-hour day under OSHA standards

D. The dose at which long-term cancer effects begin to appear in chronically exposed workers

106. The "circle of investigation" begins:

A. At the perimeter of the property and works inward toward the structure during initial assessment

B. At the area of least damage and works toward the area of greatest damage to identify the origin

C. At the area of greatest damage and works outward to map the spread of fire through the structure

D. At the suspected ignition source and works outward to verify the cause of fire ignition

107. The "rapid intervention crew" (RIC) staging requirement at a working structure fire is established by:

A. Local department policy that may vary based on the type of structure involved in the fire

B. The on-scene safety officer who determines RIC placement based on fire conditions

C. NFPA 1500 requirements that any working fire requires at least one RIC on standby

D. NFPA 1407 and NFPA 1500 requirements for any working structure fire incident

108. A "polar solvent" fuel requires:

A. Alcohol-Resistant AFFF (AR-AFFF) because standard AFFF film breaks down on polar solvents like alcohol

B. Class A foam at a 1 percent concentration applied to the burning fuel surface

C. High-expansion foam to displace oxygen from the affected compartment for suppression

D. Class B AFFF at a 6 percent concentration applied at twice the normal application rate

109. The "throttle" on a fire pump apparatus controls:

A. The discharge gate valves at each individual outlet for flow distribution to the lines

B. The engine speed (RPM) of the engine driving the pump, which controls the pump pressure

C. The intake side of the pump to limit the supply flow during operations from a static source

D. The water tank fill rate during refilling operations at a hydrant or from another apparatus

110. The "transfer valve" on a multi-stage pump:

A. Diverts water from the pump to the on-board tank when the system pressure is too high

B. Changes between the pump's high-volume and high-pressure discharge modes during use

C. Switches the pump between pressure mode (stages in series) and volume mode (stages in parallel) configurations

D. Routes water from the intake to bypass the pump entirely during deck gun operations

111. The "fire load" of a compartment is best described as:

A. The total combustible mass (in pounds per square foot) of all contents and finishes in the space

B. The maximum heat release rate possible from the burning materials in the compartment

C. The total time required for the compartment to reach flashover under typical fire conditions

D. The proportion of the compartment volume occupied by combustible furnishings and finishes

112. "Flameover" or "rollover" describes:

A. The complete involvement of a compartment in fire including ceilings, walls, and floors

B. The fire spreading horizontally across the floor of the compartment from the seat of the fire

C. The collapse of the structure due to fire damage during the suppression operation

D. The ignition of unburned gases in the upper layer, producing flames that roll across the ceiling

113. A "gusset plate" used in lightweight wood truss construction is:

A. A diagonal brace that resists racking forces in the truss assembly under load

B. A metal connector at the corners of the truss frame to connect the truss to the structure

C. A toothed metal plate that connects the truss members at each joint with minimal penetration

D. A wooden plate that serves as the base for connecting truss members during assembly

114. A "platform frame" wood-frame construction differs from a "balloon frame" in that:

A. Each floor is framed separately, with floor joists resting on top of the wall plate of the level below

B. The wall studs are continuous from the foundation to the roof, providing greater structural strength

C. The exterior walls are made of brick veneer over wood studs to provide a fire barrier between floors

D. The floor joists are larger dimension lumber than balloon frame, providing greater load capacity

115. The "PBI" (polybenzimidazole) fabric used in turnout gear outer shells:

A. Is less expensive than Nomex but offers comparable thermal protection in structural fires

B. Provides excellent flame resistance, thermal stability, and is widely used in turnout gear outer shells

C. Has been banned by NFPA standards due to its tendency to release toxic vapors when burned

D. Is used only in proximity fire fighting gear for industrial and aviation applications

116. The "voicemitter" on an SCBA facepiece functions to:

A. Transmit the wearer's voice to a wireless radio system connected to the SCBA harness

B. Convert the wearer's voice to text displayed on a heads-up display inside the facepiece

C. Allow the wearer to speak so that others can hear clearly without removing the facepiece

D. Record the wearer's transmissions for after-action review during training scenarios

117. A "kernmantle" rope construction consists of:

A. A load-bearing internal core (kern) surrounded by a protective braided outer sheath (mantle)

B. A single braid of synthetic fibers without any internal core for maximum flexibility

C. Twisted natural fibers wrapped in a synthetic protective coating for moisture resistance

D. Steel cables sheathed in a synthetic fiber jacket for high-strength rescue applications

118. The "alpine butterfly" knot is used to:

A. Join two ropes of unequal diameter for an extended rescue operation in mountainous terrain

B. Anchor a rope to a fixed point at the top of a climb for life safety belay purposes

C. Mark the location of the middle point of the rope for rappel setups during operations

D. Create a fixed loop in the middle of a rope without using either end of the rope

119. The "Stokes basket" used in rescue operations:

A. Is a folding ladder designed to fit through narrow openings for upper-floor rescue work

B. Is a rigid basket-shaped litter used to package and transport a patient during technical rescue

C. Is a portable ramp deployed from the fire apparatus for moving heavy equipment safely

D. Is a roof ladder modified with hooks at both ends for use as a horizontal bridge in operations

120. The "second means of egress" via a ground ladder at a working structure fire is:

A. Required by NFPA 1500 to be in place before any interior attack operation begins at the scene

B. Provided by the truck company for the engine company crew to use during their attack

C. Generally recommended as a safety practice and may be required by departmental SOG

D. The primary access for a search team operating on an upper floor of the structure

121. The "pickhead axe" carried by truck companies is most commonly used for:

A. Striking the halligan tool during forcible entry on inward-opening doors at residential fires

B. Cutting metal padlocks, hasps, and chains during forcible entry on commercial occupancies

C. Cutting through standard residential exterior doors after the lock has been defeated by other means

D. Vertical ventilation cuts, overhaul, and pulling ceilings during interior fire operations

122. The "rotary saw" used in forcible entry is equipped with:

A. Only wood-cutting blades, used for cutting through residential doors and door frames during entry

B. Only metal-cutting blades, used for cutting through commercial steel doors and security gates

C. Only diamond-tipped blades, used for cutting through concrete walls and masonry construction

D. Interchangeable blades for wood, metal, and masonry, allowing versatility on the fireground

123. The "buddy system" during interior search operations requires:

A. Search teams of at least two firefighters who maintain visual or physical contact throughout

B. One firefighter at the doorway and one searching the room, maintaining radio contact only

C. Two firefighters who alternate the lead position every five minutes to share fatigue equally

D. A team of three with the third acting as a relay between command and the search team

124. A "wide area search" using a search line (rope) is best suited for:

A. Single-family residential structures with floor plans typical of the local area

B. Large open spaces such as warehouses, big-box retail, and commercial occupancies

C. Multi-story apartment buildings where each apartment is searched independently

D. Small commercial occupancies where every room has at least one window for ventilation

125. "Vertical ventilation" is most effective when:

A. Performed late in the incident after the fire has reached the fully developed stage

B. Performed by a large crew using multiple chain saws operating simultaneously on the roof

C. Performed directly over the seat of the fire to release heated gases upward through the opening

D. Performed at the lowest point of the roof to take advantage of natural convection flow

126. The proper sequence for initiating positive pressure ventilation (PPV) is:

A. Identify exhaust opening, position fan at entry, start fan, verify flow path is established

B. Start fan first, then create exhaust opening once the smoke begins to move toward the doors

C. Open all windows in the structure, then position the fan at the entry and start it immediately

D. Close all doors except the entry, position the fan, start it at maximum speed initially

127. The "Mattydale" lay (or "Mattydale rack") describes:

A. A supply line layout that runs from the hydrant to the fire and back to a second pumper

B. A preconnected attack line stored in a cross-lay configuration above the pump panel

C. A reverse lay configuration where the engine starts at the fire and lays back to the hydrant

D. A specialized hose storage that combines high-rise pack with a standpipe connection kit

128. A "high-rise pack" or "stand-pipe pack" carried up to upper floors of a high-rise structure typically contains:

A. A complete 1.5-inch attack line of 200 feet with a fog nozzle pre-attached to the bundle

B. Two complete 1.75-inch attack lines of 100 feet each plus a smoothbore nozzle separately

C. A 50-foot section of 2.5-inch hose with adapter for the standpipe outlet plus a thread converter

D. Hose (typically 100–150 feet of 1.75-inch or 2.5-inch), a nozzle, adapters, and fittings for standpipe attachment

129. A "5-inch LDH" supply line is designed to:

A. Replace 2.5-inch attack lines for interior attack on commercial structure fires for higher flows

B. Supply large flows (typically 1,000+ gpm) from a hydrant or another pumper to the attack engine

C. Provide water from a static water source to the apparatus during drafting operations

D. Allow multiple attack lines to be operated simultaneously from a single supply point

130. The "nozzle reaction" for a 2.5-inch handline with a 1-1/8" smoothbore tip at 50 psi nozzle pressure is approximately:

A. 50 pounds of force resistance experienced by the operator at the nozzle

B. 75 pounds of force resistance experienced by the operator at the nozzle

C. 99 pounds of force calculated as $NR = 1.57 \times d^2 \times NP$ for this smoothbore tip

D. 150 pounds of force resistance experienced by the operator at the nozzle handle

131. The "tactical reserve" of water for fire suppression at a working structure fire is:

A. A second source of water (such as a backup hydrant or tanker shuttle) prepared in case the primary supply fails

B. The water remaining in the apparatus tank after the primary attack line is shut down

C. The water needed to provide a sprinkler activation by the system serving the structure

D. The legal minimum water supply requirement under local code for residential structures

132. The "vent-enter-isolate-search" tactic should NOT be used when:

A. A known victim is suspected to be in a specific room with reasonable confirmation of location

B. The room to be searched has a window directly accessible from an exterior ground ladder

C. Conditions allow the rescuer to make entry through the window and isolate the room rapidly

D. The room is fully involved with fire or the entry would create a flow path with the fire area

133. The "balloon throw" deployment of a salvage cover:

A. Requires four firefighters working in unison to inflate and toss the cover over contents

B. Uses two firefighters who toss the partially unfolded cover over the contents being protected

C. Is performed by a single firefighter using a pneumatic device to inflate the cover

D. Is reserved for cubicle workspaces and similar enclosed environments only

134. The use of a "TIC" (thermal imaging camera) during overhaul:

A. Identifies hot spots inside walls, ceilings, and concealed spaces where hidden fire may still exist

B. Documents the fire scene for the investigator's report and the property owner's records

C. Verifies that the building's electrical service has been disconnected at the meter location

D. Tests the carbon monoxide level in the atmosphere before the fire scene can be released

135. "Emergency traffic" called over the fire ground radio:

A. Indicates that all radio operations should switch to a different channel for the duration

B. Is reserved for use by the incident commander only when ordering an immediate evacuation

C. Is only used during EMS responses involving life-threatening patient conditions during transport

D. Indicates time-critical safety information; all other radio traffic must clear the channel immediately

136. A "Class B" fire alarm circuit:

A. Has all devices wired in a single loop that does not return to the panel, with no fault tolerance

B. Uses two separate conductor pairs for power and alarm signal between the panel and devices

C. Is required by NFPA 72 for all new commercial fire alarm system installations after 2020

D. Provides backup power directly from each device through internal battery backup units

137. A "wet-pipe" sprinkler system:

A. Is filled with antifreeze solution to prevent freezing in unheated portions of the building

B. Activates a deluge valve that discharges water from all sprinkler heads simultaneously

C. Contains water under pressure at all times, allowing immediate discharge when a head activates

D. Requires manual activation at the alarm panel before water flows through the system

138. The "B-post sister" technique in vehicle extrication is used to:

A. Stabilize the B-post when it has been damaged in the collision before any cutting begins

B. Create a relief cut in the B-post to allow side-removal during extrication operations

C. Connect two B-posts of different vehicles when they have collided together at the scene

D. Reinforce the B-post when the vehicle is being lifted with hydraulic spreaders during operations

139. The "patient packaging" stage of vehicle extrication includes:

A. Removing the vehicle's airbags and other electronic components before patient access

B. Cutting and folding the roof of the vehicle to provide overhead clearance for the patient

C. Stabilizing the vehicle's chassis using cribbing and step chocks at all four corners simultaneously

D. Securing the patient to a backboard, applying a cervical collar, and preparing the patient for removal

140. The "Look up, Look down, Look around" wildland safety reminder is used to:

A. Confirm that all members of the crew are accounted for at the safety zone before operations

B. Check the equipment for damage at the start of each shift on a wildland fire incident

C. Continuously assess conditions including weather, fire behavior, terrain, and the location of crews

D. Confirm radio communications with the incident commander before initiating any tactical action

141. The "fire patterns" investigators use to determine the origin and cause of a fire include:

A. Only the V-pattern on walls above the suspected point of origin during the fire investigation

B. Only the alligator char pattern on wood surfaces that have been exposed to the fire heat

C. Only the smoke staining patterns on walls and ceilings near the area of fire involvement

D. V-patterns, char patterns, smoke patterns, melting patterns, and other physical indicators of fire behavior

142. A "pre-incident plan" for a commercial occupancy should include:

A. Building features, occupancy details, hazards, water supplies, access points, and key contact information

B. Only the building address and the names of all employees who work at the property location

C. Only the floor plan with the location of every door and window in the structure

D. Only the contact information for the property owner and the property's insurance company

143. The "AFFF" foam concentrate works on hydrocarbon fuels by:

A. Cooling the burning fuel below its autoignition temperature through rapid evaporation effects

B. Diluting the burning fuel until its concentration falls below the lower flammable limit by displacement

C. Forming a vapor-suppressing aqueous film on the surface of the fuel and excluding oxygen from the fuel

D. Reacting chemically with the fuel to neutralize its flammable properties at the surface

144. The "pump test" required for fire apparatus under NFPA 1911 includes:

A. Only a visual inspection of the pump for damage and leakage at the discharge gates
B. Flow tests at rated capacity, including a 20-minute test at 100 percent of rated capacity
C. Hydrostatic testing of the pump body at twice the rated working pressure for safety
D. A simulated fireground test using actual fire to verify the pump's performance at the scene

145. A "centrifugal" fire pump operates by:

A. Using a rotating impeller to add kinetic energy to the water, which is converted to pressure in the volute
B. Using positive displacement pistons to push water through the discharge gates with high pressure
C. Using compressed air to drive water through the pump body and out the discharge ports
D. Using a series of vacuum chambers that lift water through atmospheric pressure to the discharge

146. The "fire growth rate" in modern residential structures has been documented as:

A. Slower than in older homes because of the use of fire-retardant building materials in construction
B. The same as historical fires because the basic principles of combustion have not changed
C. Faster than in older homes because of synthetic furnishings and open floor plans common today
D. Variable depending on the season because of temperature and humidity differences year-to-year

147. "Carbon monoxide" produced during a fire is:

A. Heavier than air and accumulates in low areas of the compartment near the floor
B. Detectable by smell at concentrations well below the lethal level for human exposure
C. Produced only when synthetic materials such as plastics and polymers are burning at high temperatures

D. A colorless, odorless, toxic gas produced by the incomplete combustion of carbon-based fuels in fires

148. A "Type IV" (heavy timber) construction relies on:

A. Large cross-section wood members that resist fire damage through a protective self-charring layer

B. Steel framing with spray-applied fireproofing to achieve 2-hour fire resistance ratings

C. Reinforced concrete construction throughout the structural frame of the building

D. Light wood framing with engineered I-joists and metal-plate-connected trusses throughout

149. "Tilt-up" concrete construction is most commonly used in:

A. Multi-story residential apartment buildings with concrete floor decks and brick veneer

B. Single-story commercial warehouse and big-box retail structures with concrete panel walls

C. High-rise office buildings with steel frame structures and concrete floor decks throughout

D. Below-grade structures such as parking garages, basements, and underground facilities

150. The "moisture barrier" in structural turnout gear:

A. Wicks perspiration away from the firefighter's skin to keep them comfortably dry during operations

B. Provides the primary thermal protection against radiant, convective, and conductive heat

C. Prevents liquids and bloodborne pathogens from passing through to the inner thermal liner and skin

D. Allows water vapor to escape from the gear during operations to reduce heat stress on the firefighter

ANSWER KEY WITH EXPLANATIONS — PRACTICE EXAM 13

1. B — Address and callback. The single most critical information a dispatcher must obtain is the exact location of the emergency and a way to reach the caller back, because everything else can be obtained on arrival but the response cannot begin without it. If the call is disconnected, the callback number is the only way to reconnect.

2. A — Annual SCBA flow testing per NFPA 1852 verifies that the regulator delivers airflow at proper rates under varying demand and ambient conditions. Flow testing is the primary method of confirming the user will receive adequate air during interior operations. Harness condition, lens scratches, and PASS function are checked separately during routine inspections.

3. D — Smoke being drawn back into a structure through gaps around a closed door indicates the fire has consumed available oxygen and is "intake breathing." The compartment is now ventilation-limited and is pulling air through any available opening, which is a primary warning sign of impending backdraft.

4. B — Sagging or "saw-toothing" of the roof between rafters means the roof decking has lost its ability to bridge the rafters because heat has weakened both the deck and its supports. This visual indicator warns of imminent collapse and signals firefighters off the roof immediately.

5. C — TPP measures the combined insulating capability of the outer shell, moisture barrier, and thermal liner of the turnout ensemble. The rating reflects how long the gear protects against both convective and radiant heat. Higher TPP means longer protection time before second-degree burns occur.

6. A — The remote pressure gauge (often called a heads-up display or chest-mounted gauge) lets the firefighter monitor cylinder pressure without reaching back to the cylinder valve. Continuous visual access to air supply is essential for managing interior time, and it eliminates the need to twist or be assisted to read the gauge.

7. C — The fire plume is the rising column of hot gases, smoke, and air entrained from the surroundings above the burning fuel. The plume drives convective heat transfer upward and is the mechanism by which heat reaches ceilings and ignites overhead fuels.

8. D — A fire wall is a structural separation built to remain standing even if the structures on either side collapse, providing a true barrier between buildings or large compartments. Fire partitions are non-load-bearing and offer a shorter-duration barrier within a single occupancy.

9. B — Most fire service service-life policies retire life safety rope at 10 years from the date of manufacture, even if no obvious damage exists. The 10-year limit accounts for cumulative environmental degradation that may not be visually apparent. Departments may set shorter limits but rarely longer.

10. C — A load-releasing hitch (such as a Mariner's hitch) allows the rescuer to gradually transfer or release a load from a tensioned rope while maintaining full control of the rate of release. This is essential when shifting load between systems or when an anchor must be repositioned under load.

11. A — Every ground ladder must be inspected after each use for damaged rungs, bent or cracked beams, and functional dogs/locks. Catching damage immediately after use prevents a failed ladder from being deployed on the next response, when the consequences could be fatal.

12. D — The K tool is used to pull the cylinder out of a door, exposing the lock mechanism behind it. A key tool is then inserted into the exposed mechanism to operate the locking bolt manually. The K tool and key tool are a paired set for through-the-lock entry.

13. B — A thermal imaging camera detects temperature differences between objects in the firefighter's view, allowing victims, hot spots, structural elements, and door surfaces to stand out against the cooler background. The TIC does not see through walls; it sees thermal differences at surfaces.

14. A — Ventilation-induced flashover occurs when an opening introduces oxygen to a fuel-rich, oxygen-limited compartment, triggering rapid fire growth and full-room involvement. UL and NIST research has shown that improperly timed ventilation can trigger flashover within seconds of an opening being made.

15. C — Double-jacket hose has two layers of woven jacket material around the inner rubber liner, providing improved abrasion resistance and durability over single-jacket hose. The extra layer extends hose life in tough operating environments and is standard for attack and supply hose.

16. D — Available fire flow is calculated as the flow at a specified residual pressure (typically 20 psi) derived from a flow test using the formula GPM_r = GPM_f × (HR/HF)^0.54. The flow at zero residual is theoretical and unusable; 20 psi is the practical minimum for fire ground operations.

17. C — A constant gallonage nozzle delivers a fixed flow rate at its rated nozzle pressure with no flow adjustment available to the operator. The flow is set by the orifice size, so the same gpm is produced as long as proper nozzle pressure is supplied.

18. A — A blitz attack uses a master stream device (deck gun, portable monitor) to rapidly knock down a large body of fire or protect exposures. The 500+ gpm flow delivers heavy water quickly when an interior attack would be unsafe or insufficient.

19. B — Smoke odor is removed by opening windows and doors and using mechanical ventilation (PPV or smoke ejectors) to exchange the contaminated indoor air with fresh outdoor air. Mechanical exchange is faster and more effective than chemical deodorizers, which only mask the odor.

20. C — Pulling a ceiling means using a pike pole or hook to open the ceiling material, allowing the firefighter to check for fire extension into the concealed space above. This is essential during overhaul because hidden fire in joist spaces and lofts is a common cause of rekindle.

21. B — A tactical channel (sometimes called a fire ground channel) is dedicated to communication between units operating at the same incident. Separating tactical traffic from dispatch traffic prevents congestion and improves clarity during operations.

22. D — A Class A circuit uses a loop wiring configuration in which the conductor returns to the panel after passing through all devices, providing fault tolerance: a single break in the loop still allows all devices to function. This redundancy is required for higher-risk applications.

23. A — Design density is expressed as gallons per minute per square foot (gpm/ft²) of protected floor area, which captures the required water application rate for the occupancy hazard. Light hazard occupancies have lower densities; high-hazard occupancies have higher densities.

24. B — The third door cut removes both side doors and the B-post on one side of a vehicle, creating a single large opening for patient access and removal. The technique is much faster than working through individual door openings and is standard for severely entrapped patients.

25. D — An anchor point is a safe location from which a fire line is started and progressively extended, such as a road, river, rock outcrop, or burned-over area. Anchoring prevents the fire from outflanking and trapping the crew working the line.

26. C — The primary survey identifies and addresses life threats using the ABCDE approach: Airway, Breathing, Circulation, Disability, and Exposure. Each element is treated as it is found before moving on, ensuring that immediately lethal problems are corrected first.

27. B — A tourniquet is indicated when life-threatening arterial bleeding from an extremity cannot be controlled by direct pressure. Modern protocols (TECC, Stop the Bleed) place the tourniquet early when bleeding is severe rather than waiting for direct pressure to fail.

28. A — The DOT Emergency Response Guidebook (ERG) is the primary field reference for identifying hazardous materials and recommending initial response actions, including isolation distances and protective actions. Every fire apparatus is required to carry a current ERG.

29. D — DOT regulations require shipping papers to identify the proper shipping name, hazard class, UN/NA number, packing group, and quantity for each hazardous material being transported. This information allows responders to evaluate the hazard quickly.

30. C — Char depth measurements help investigators identify areas where the fire burned longest or hottest, which often correlates with the area of origin. Deeper char generally indicates longer or hotter burning, helping trace fire travel and locate ignition.

31. A — NFPA 170 (Standard for Fire Safety and Emergency Symbols) provides standardized symbols used on pre-incident plans and building diagrams, including the FDC symbol. Standardization ensures any responder can read any pre-plan.

32. B — Expansion ratio is the ratio of finished foam volume to the volume of foam solution used to produce it. Low-expansion foam (≤20:1) is used for Class B fires; medium- and high-expansion foams (up to 1000:1) are used for total flooding of confined spaces.

33. A — Net pump pressure (NPP) is calculated by subtracting the intake pressure from the discharge pressure, representing the actual pressure the pump is producing. NPP is used in pump testing to evaluate the pump's contribution apart from the supply.

34. A — Smoke from a structure fire does not contain pure oxygen; combustion consumes oxygen as fuel burns. Fire smoke contains CO, CO_2, HCN, particulates, water vapor, and various other products of incomplete combustion — but not free oxygen at concentrations that would aid breathing.

35. D — Truss-loft and attic spaces allow fire to spread rapidly and undetected through the lightweight structural assembly, weakening members and creating collapse hazards before crews realize fire is present in the void. Lightweight truss assemblies can fail within minutes of fire exposure.

36. B — Interface areas are locations where two pieces of gear meet, such as the coat-pant overlap, hood-helmet edge, and glove-sleeve junction. These transitions are the most common entry points for combustion byproducts to reach the skin and are the focus of particulate-blocking gear design.

37. C — The Universal Emergency Breathing Safety System (UEBSS) provides a standardized fitting allowing SCBAs from different manufacturers to share air during an emergency. The fitting bypasses brand-specific connectors, ensuring rescue is possible regardless of equipment compatibility.

38. D — A prusik hitch is a friction hitch that grips a static rope when loaded and slides freely along the rope when unloaded. This makes it ideal for ascending ropes, building progress-capture systems, and adding safety to belay devices.

39. B — The Munter hitch is a friction hitch tied with a carabiner that provides controlled friction for lowering or belaying when a mechanical belay device is not available. It can be controlled with one hand and is a standard backup skill for technical rescue.

40. C — A leg lock secures the firefighter on the ladder by passing one leg through and around a rung, freeing both hands while keeping the body anchored. This allows the firefighter to perform tasks such as window operations or victim handling at an upper position.

41. D — A shove knife is a thin metal tool passed between the door and jamb to retract the latch bolt of a residential door from outside. It is faster than conventional forcible entry on most unlocked-but-latched doors and leaves no damage.

42. A — The hook and irons (also called the "hook, can, and irons") are carried by the truck company member responsible for forcible entry: a halligan, a flathead axe, and a pike pole or hook. The combination handles forcible entry, opening up, and overhaul tasks.

43. C — Package and remove involves securing the downed firefighter's SCBA (ensuring continued air supply), grabbing the DRD or wrapping webbing for handles, then moving rapidly toward the exit. Stopping to remove or cut the SCBA harness wastes time and removes the firefighter's air supply.

44. D — A PASS device must activate automatically after a preset period of motionlessness (typically about 30 seconds), producing an audible alarm to help rescuers locate the unconscious or trapped firefighter. Manual activation is also available for emergencies.

45. B — IFSTA and most ventilation references specify a minimum 4 ft × 4 ft ventilation opening for vertical roof ventilation. Smaller holes restrict airflow and reduce the effectiveness of the operation; larger holes may be needed for larger fires.

46. C — A trench cut is a defensive ventilation tactic — a long, narrow cut completely across a roof to stop horizontal fire spread through the cockloft or attic. A strip cut (or vent hole) is offensive, releasing heat from over the fire.

47. D — Storz couplings connect by aligning lugs and rotating a quarter turn, eliminating the threading time and gender issues of NH or NPSH couplings. Storz is standard for 4-inch and larger LDH supply hose, where speed and reliability matter most.

48. A — Available water at a hydrant flow test is calculated using a derivative of the Hazen-Williams formula, GPM_r = GPM_f × (HR/HF)^0.54. This empirical relationship has been validated for fire service applications and is used to predict flow at any chosen residual pressure.

49. B — The reach of a fire stream is the distance the stream travels while maintaining its pattern and effectiveness, not simply the maximum projected distance. A stream that has broken up or lost its pattern is no longer reaching effectively, even if water droplets travel farther.

50. C — Indirect attack converts water to steam in the heated atmosphere of the compartment, absorbing enormous quantities of heat (about 970 BTU per pound of water vaporized) and smothering the fire by displacing oxygen. The tactic is used when conditions are too severe for entry.

51. A — OSHA 1910.134 requires two-in/two-out during interior structural fire suppression operations in IDLH atmospheres. The two members outside must be equipped to perform immediate rescue of the interior team. The rule does not apply to non-IDLH operations.

52. D — The balloon throw uses two firefighters who toss a partially unfolded salvage cover over contents in a coordinated motion, allowing fast deployment over furniture or other items. The technique is named for the cover's billowing shape during the toss.

53. B — Rekindle is prevented by thoroughly examining concealed spaces (wall voids, attic spaces, floor cavities) and confirming complete extinguishment before leaving the scene. Hidden smoldering fire in voids is the most common cause of rekindle hours after departure.

54. A — Plain language ensures that all responders, including those from mutual aid agencies who do not share local 10-codes, clearly understand fire ground communication. NIMS/ICS and NFPA 1561 both require plain language for inter-agency operations.

55. D — A smoke control system in a high-rise pressurizes stairwells (the egress paths) and uses fans to direct smoke away from occupants and toward exhaust openings. The pressurization keeps stairwells smoke-free so occupants can evacuate safely.

56. C — A Class II standpipe is intended for occupant use only, with preconnected 1.5-inch hose stored in cabinets at each level. Class I (firefighter use, 2.5-inch outlets) and Class III (both occupants and firefighters) are the other standpipe types.

57. A — A main drain test measures the water supply pressure at the system before opening the main drain and during a controlled discharge through it, confirming that the supply remains within acceptable range. This is the standard quarterly test of a wet-pipe sprinkler system's water supply.

58. B — A seatbelt pretensioner tightens the belt prior to impact and contains stored energy (typically a pyrotechnic charge or spring) that can release unexpectedly if cut. Rescuers must identify and avoid these components during extrication to prevent injury.

59. D — Hardened steel anti-intrusion beams in modern vehicle doors require hydraulic cutters or specialized rescue tools designed for the task. Bolt cutters, axes, and standard saws are not effective on hardened steel and risk tool damage or injury.

60. C — A drop point is a designated location where supplies, food, water, and equipment are dropped off for crews working on remote sections of a wildland fire line. The drop point connects logistics with operations in terrain where vehicles cannot deliver directly.

61. B — The ABC approach — Airway, Breathing, Circulation — is the foundation of basic life support and trauma care patient assessment. Each is assessed and corrected before moving to the next, ensuring the most life-threatening problems are managed first.

62. D — Heat stroke presents with hot skin (which may be dry or moist depending on whether sweating mechanisms have failed), altered mental status, and a rapid pulse with markedly elevated body temperature. Heat stroke is a true medical emergency requiring rapid cooling and transport.

63. A — DECIDE begins with Detect — recognizing the presence of hazardous materials at the scene through observation, placards, container shapes, and other identification clues. Detection precedes all other steps because nothing else applies if hazmat presence is not recognized.

64. B — DOT regulations require shipping papers to be within reach of the driver while operating the vehicle, such as on the driver's seat, on the door pocket, or in a holder within reach of the driver's seat. This placement allows immediate access during an emergency.

65. C — Spalling occurs when localized high temperatures cause trapped moisture inside concrete to expand as steam, fracturing the surface in flakes and chips. Spalling patterns help investigators identify areas of intense fire involvement.

66. A — A V-pattern is a classic indicator of the point or area of origin: the narrow bottom of the V is near the heat source, and the V opens upward as the fire spreads. Tracing V-patterns is one of the primary methods for locating origin during investigation.

67. B — A useful pre-incident plan documents building access points, fire department connections, hydrant locations, and exterior hazards. This operational information lets crews position apparatus, secure water, and identify hazards immediately on arrival.

68. C — Fluoroprotein foam is composed of hydrolyzed protein concentrate combined with fluorinated surfactants, which improves the foam's fuel resistance and flow characteristics compared to plain protein foam. The fluorochemicals enhance the foam's ability to seal the fuel surface.

69. D — Knockdown time is measured from the start of foam application until visible flames are extinguished on the fuel surface. It is the practical measure of how quickly a foam application brings a Class B fire under control.

70. C — The relief valve on a fire pump opens to divert water from the discharge side back to the intake when pressure exceeds a preset value, protecting hose, couplings, and personnel from over-pressurization. It is set above normal operating pressure and below the burst pressure of the system.

71. A — Dave Dodson's smoke reading method evaluates four smoke attributes — volume, velocity, density, and color — to predict fire behavior and conditions inside a compartment before entry. Reading smoke is a foundational size-up skill and informs tactical decisions.

72. D — Thermal balance is the natural layering of hot gases above and cool air below in a compartment fire. Disturbing this balance with wide fog streams forces hot gases down to the floor, increasing burn risk for crews and obscuring visibility.

73. B — A 2-hour fire-resistance rating means the assembly maintains its structural integrity and fire-blocking function for 2 hours under ASTM E119 standard test conditions. The rating describes performance under a specific test, not absolute time in any real fire.

74. A — A rated assembly maintains its rating only when all of its tested components — door, frame, hardware, gaskets, seals — are intact and functioning together as tested. Substituting non-rated parts or removing components voids the rating.

75. D — The identification on the back of a turnout coat should display the wearer's last name, first initial, and identifying agency or station number, allowing accountability and identification on the fire ground. Personal information beyond this scope is not appropriate.

76. B — The decon zone on a fire scene is the area where firefighters and gear undergo gross decontamination to remove combustion byproducts and carcinogens before personnel leave the scene. Field decon limits exposure during transport back to the station.

77. C — Skip breathing involves a normal inhalation, a brief breath hold, and a slow exhalation to extend cylinder duration during emergency air conservation. The technique reduces minute volume without producing hypercapnia and is a standard emergency procedure.

78. D — Personal escape rope worn for emergency self-rescue must comply with NFPA 1983, the Standard on Life Safety Rope and Equipment for Emergency Services. NFPA 1983 includes specific requirements for escape rope diameter, length, and breaking strength.

79. B — Any bowline used in a life safety application must be backed up with a safety knot (typically an overhand) to prevent the bowline from working loose under cyclical loading. Without the safety, a bowline can untie if shaken or loaded irregularly.

80. C — Tip load is the maximum weight that can be applied at the tip end of the ground ladder while the ladder rests against a structure. This rating reflects the most demanding load placement and is the limiting factor for rescue operations.

81. C — Tap and gap is a forcible entry technique in which the irons (halligan and flathead axe) are tapped together to gap the door from the jamb, exposing the locking mechanism for the next step. The controlled tap creates the gap with minimal door damage.

82. A — The hydra-ram is a portable hydraulic spreader powered by a built-in hand pump, used to force inward-opening doors by spreading them apart from the frame. It is a one-firefighter tool that produces enough force to defeat most residential locks.

83. D — VEIS was developed for situations where conditions inside a structure are too severe for primary search but a known or likely victim is in a specific room accessible from outside. The targeted, isolated approach allows rescue when general primary search is unsafe.

84. B — The primary search is a rapid search performed while fire conditions still threaten occupants, with the goal of locating viable victims as quickly as possible. Speed and coverage take priority over thoroughness, which is achieved during the later secondary search.

85. C — Hydraulic ventilation uses the air-entrainment effect of a wide fog stream directed out a window to draw smoke from the room through the opening. The stream creates a low-pressure zone behind it that pulls smoke along with the water spray.

86. A — Negative pressure ventilation uses smoke ejector fans positioned at an exhaust opening to draw smoke and heated gases out of the structure. It is generally slower than positive pressure ventilation but useful in situations where PPV cannot be safely applied.

87. D — The shoulder load is a hose carry method in which the hose is folded so it can be carried in loops over the shoulder, with the hose paying out as the firefighter walks toward the fire. The load is designed for one-firefighter stretches with the line ready to charge.

88. C — A horseshoe load is loaded along the perimeter of the hose bed in a U-shape, with the couplings exposed on the outer edge. The pattern allows the hose to pull cleanly without binding and gives quick access to couplings for breaking and reconnecting.

89. B — ISO and NFPA 1142 calculations for typical residential structures under 3,000 square feet yield a required fire flow of approximately 500 gpm. This figure accounts for typical construction, fuel load, and exposure conditions of single-family dwellings.

90. C — A fog stream excels at absorbing heat from the heated atmosphere through evaporation and at protecting firefighters from radiant heat via the water curtain effect. The wide pattern and large surface area maximize heat absorption per gallon applied.

91. D — A constant pressure (automatic) nozzle maintains a constant nozzle pressure (typically 100 psi) by automatically adjusting the orifice size as flow rates change. This keeps stream quality and reach consistent across a range of flows.

92. A — The three traditional tactical priorities of fire ground operations are life safety, incident stabilization, and property conservation, in that order. Every tactical decision is evaluated against this hierarchy.

93. B — The rescue profile of a structure is the assessment of the likelihood that occupants are present and in need of rescue, based on structure type, time of day, conditions, and other factors. The profile informs the urgency and method of search.

94. D — The delayed salvage cover technique applies when suppression water has already begun to spread before covers can be properly deployed. Crews use chutes, dams, and channeling to direct accumulated water rather than trying to cover already-wet contents.

95. C — The hot wash (or gross decon rinse) at the scene removes the bulk of combustion contaminants from turnout gear before the firefighter and gear transport back to the station for advanced cleaning. Field rinse reduces exposure during transport and contamination of the apparatus.

96. A — The Incident Command System (ICS) requires a clear chain of authority, manageable span of control (typically 3 to 7 subordinates per supervisor), and unified command when multiple agencies share authority. These structural elements make incident command effective.

97. D — Manual pull stations are located at exit doors and along egress paths so that occupants can manually initiate the fire alarm system as they evacuate. Code requires placement that ensures pull stations are accessible from any point in the egress path.

98. C — Deluge systems are most commonly installed in high-hazard occupancies such as aircraft hangars, chemical processing facilities, and flammable liquid storage where rapid total flooding of an area is required. Open sprinkler heads discharge water from every head simultaneously upon system activation.

99. B — The standard stages of vehicle extrication are scene size-up, stabilization, access, disentanglement, removal, and termination. Each phase has specific objectives and safety considerations that must be addressed before moving to the next.

100. C — The B-post is the structural center pillar between the front and rear doors of a four-door passenger vehicle, providing roof support and seatbelt mounting. Cutting the B-post is a routine step in side-removal extrication techniques.

101. A — The Downhill Firefighting Guidelines provide specific rules for firefighters operating downhill from a fire, because the fire can rapidly run uphill toward them and cut off their escape. The guidelines include strict lookout requirements, escape routes, and trigger points.

102. B — AVPU stands for Alert, Verbal response, Painful stimulus response, and Unresponsive — the four levels of consciousness used in rapid patient assessment. The scale allows quick triage of mental status without detailed neurological examination.

103. D — A patient with suspected spinal injury must be manually immobilized in a neutral in-line position to prevent further spinal cord injury until formal spinal motion restriction (cervical collar, full immobilization device) is in place. Any unguarded movement risks irreversible damage.

104. A — The warm zone contains the decontamination corridor between the hot zone (where contamination is present) and the cold zone (uncontaminated support area). Decon takes place in the warm zone to prevent contamination from spreading outward.

105. C — The Permissible Exposure Limit (PEL) is OSHA's maximum concentration to which a worker may be exposed for an 8-hour day, time-weighted average. Exposures above the PEL require respiratory protection and engineering controls to bring them down.

106. B — Investigation begins at the area of least damage and works toward the area of greatest damage, following the progression of fire in reverse to identify the area of origin. Starting at the most damaged area can be misleading because heat and ventilation can produce intense damage away from the origin.

107. D — NFPA 1407 (Standard for Training Fire Service Rapid Intervention Crews) and NFPA 1500 (Fire Department Occupational Safety and Health) both require a RIC to be in place at any working structure fire. The RIC is dedicated to rescue of trapped or missing firefighters.

108. A — Polar solvent fuels (alcohols, ketones, ethers) require Alcohol-Resistant AFFF (AR-AFFF) because standard AFFF film is broken down by polar solvents, eliminating the vapor-suppressing barrier. AR-AFFF forms a polymeric membrane that resists polar solvent breakdown.

109. B — The throttle on a fire pump apparatus controls the engine speed (RPM) of the engine driving the pump. Higher engine speed produces higher pump pressure (within the pump's operating range), so the throttle is the operator's primary pressure control.

110. C — The transfer valve on a multi-stage centrifugal pump switches between pressure mode (impellers in series, higher pressure, half capacity) and volume mode (impellers in parallel, full capacity, half pressure). Operators select mode based on required flow and pressure.

111. A — Fire load is the total combustible mass — typically expressed in pounds per square foot or BTU per square foot — of all contents and finishes in a compartment. The fire load determines the maximum possible heat release and burning duration in the space.

112. D — Rollover (flameover) is the ignition of unburned gases in the upper smoke layer, producing flames that roll across the ceiling. It is a warning sign that flashover may be imminent and signals crews to cool the gas layer or retreat.

113. C — A gusset plate in lightweight wood truss construction is a toothed metal plate that connects the truss members at each joint. The teeth penetrate only a fraction of an inch into the wood, making the connection vulnerable to heat-induced failure during a fire.

114. A — In platform frame construction, each floor is framed separately, with floor joists resting on top of the wall plate (top plate) of the level below. This creates inherent fire blocking at each level, in contrast to balloon frame's continuous stud cavities.

115. B — Polybenzimidazole (PBI) is a high-performance synthetic fiber providing excellent flame resistance and thermal stability, widely used in turnout gear outer shells. PBI does not melt, drip, or burn, and it maintains strength after exposure to high temperatures.

116. C — The voicemitter on an SCBA facepiece allows the wearer to speak so that others can hear clearly without removing the facepiece. The diaphragm and chamber design carry the voice through the seal without compromising the facepiece's protective integrity.

117. A — Kernmantle rope consists of a load-bearing internal core (kern) surrounded by a protective braided outer sheath (mantle). The core provides strength; the sheath protects the core from abrasion and UV damage. This is the standard construction for fire service life safety rope.

118. D — The alpine butterfly creates a fixed loop in the middle of a rope without using either end. It is used for attaching to a mid-rope point for hauling systems or for isolating a damaged section of rope.

119. B — A Stokes basket is a rigid basket-shaped litter used to package and transport a patient during technical rescue. It supports the patient's full body and can be lifted, lowered, or dragged through difficult terrain.

120. C — A second means of egress via ground ladder is generally recommended as a safety practice during interior operations and may be required by departmental SOG. Many departments and NFPA recommendations call for a second ladder at the rear or opposite side for crews to use as an emergency exit.

121. D — The pickhead axe is used primarily for vertical ventilation cuts, overhaul, and pulling ceilings during interior fire operations. The pick end can puncture or pry; the blade can cut through wood and similar materials.

122. D — A rotary saw used in forcible entry carries interchangeable blades for wood (carbide-tipped), metal (abrasive or composite), and masonry (diamond-tipped), allowing the truck company to cut any material encountered on the fire ground. Blade selection matches the target material.

123. A — The buddy system requires search teams of at least two firefighters who maintain visual or physical contact throughout the operation. The contact ensures one firefighter can always assist the other and that teams stay together in low-visibility conditions.

124. B — Wide area searches using a search line (rope) are best suited for large open spaces such as warehouses, big-box retail stores, and commercial occupancies where conventional wall-following searches are inadequate. The rope provides a known path back to entry.

125. C — Vertical ventilation is most effective when performed directly over the seat of the fire to release heated gases upward through the opening. Offset openings allow heat and smoke to spread horizontally before exiting.

126. A — The proper PPV sequence is to identify the exhaust opening, position the fan at the entry point, start the fan, and verify the flow path is established. Starting the fan without an exhaust path pressurizes the structure and worsens interior conditions.

127. B — The Mattydale lay (named for the Mattydale Fire Department in NY) describes a preconnected attack line stored in a cross-lay configuration above the pump panel, perpendicular to the apparatus's long axis. The cross-lay allows rapid deployment from either side of the apparatus.

128. D — A high-rise pack typically contains 100 to 150 feet of 1.75-inch or 2.5-inch hose, a nozzle, adapters, and fittings for connection to standpipe outlets. The pack is carried up to the fire floor and connected to the standpipe outlet on the floor below.

129. B — Five-inch LDH supply line is designed to supply large flows (typically 1,000+ gpm) from a hydrant or another pumper to the attack engine. Low friction loss in LDH allows long lays without intermediate pumpers.

130. C — Nozzle reaction for a smoothbore tip is $NR = 1.57 \times d^2 \times NP$. For a 1-1/8-inch tip ($d^2 = 1.266$) at 50 psi: $NR = 1.57 \times 1.266 \times 50 \approx 99$ lbs. This level of reaction requires two firefighters on the line for stable operation.

131. A — The tactical reserve is a second source of water (backup hydrant, tanker shuttle, or additional supply line) prepared in case the primary supply fails during operations. Maintaining a reserve protects against catastrophic loss of attack water mid-operation.

132. D — VEIS should not be used when the room to be searched is fully involved with fire or when entry would create a flow path with an active fire area. The tactic requires that the door to the room can be closed to isolate; if the fire is in the room, isolation is impossible.

133. B — The balloon throw uses two firefighters who toss the partially unfolded cover over the contents being protected. The cover's billowing shape during the toss gives the technique its name; it is fast and works well in rooms with high-value contents.

134. A — A thermal imaging camera during overhaul identifies hot spots inside walls, ceilings, and concealed spaces where hidden fire may still exist. The TIC allows targeted opening of only the warm areas rather than blind tearing of finished surfaces.

135. D — "Emergency traffic" indicates time-critical safety information, and all other radio traffic must clear the channel immediately to allow the message to be heard. Mayday, evacuation orders, and immediate hazard warnings all begin with emergency traffic.

136. A — A Class B fire alarm circuit has all devices wired in a single loop that does not return to the panel, with no fault tolerance. A break in the line disables all devices beyond the break, which is why Class A (looped) circuits are preferred for higher-risk applications.

137. C — A wet-pipe sprinkler system contains water under pressure at all times throughout the piping, allowing immediate discharge when a sprinkler head activates. Wet systems are the simplest and most reliable sprinkler design and are used wherever freezing is not a concern.

138. B — The B-post sister is a relief cut in the B-post that allows side-removal of doors and the B-post during vehicle extrication. The relief allows the post to fold or bend at the cut point during the operation.

139. D — Patient packaging during vehicle extrication includes securing the patient to a backboard, applying a cervical collar, and preparing the patient for removal. Packaging is performed after disentanglement and before final removal.

140. C — "Look up, Look down, Look around" is a wildland safety reminder used to continuously assess conditions including weather, fire behavior, terrain, and the location of other crews. The continuous scan habit catches changing conditions before they become entrapments.

141. D — Fire patterns used by investigators include V-patterns, char patterns, smoke patterns, melting patterns, and other physical indicators of fire behavior. No single pattern type identifies origin and cause; investigators correlate multiple patterns to reconstruct the fire.

142. A — A useful pre-incident plan for a commercial occupancy includes building features, occupancy details, hazards, water supplies, access points, and key contact information. This operational content is what crews need on arrival to engage safely and effectively.

143. C — AFFF works on hydrocarbon fuels by forming a vapor-suppressing aqueous film on the surface of the fuel that excludes oxygen and suppresses flammable vapors. The film is the key suppression mechanism distinguishing AFFF from earlier protein foams.

144. B — NFPA 1911 pump testing includes flow tests at rated capacity (100 percent for 20 minutes, 70 percent for 10 minutes, 50 percent for 10 minutes) plus pressure tests and vacuum tests. The annual test verifies the pump can deliver rated performance.

145. A — A centrifugal fire pump operates by using a rotating impeller to add kinetic energy to water; the kinetic energy is converted to pressure as the water slows in the surrounding volute. This is the standard pump design for nearly all modern fire apparatus.

146. C — Fire growth rate in modern residential structures has been documented as significantly faster than in older homes, primarily because of synthetic furnishings (which burn hotter and faster) and open floor plans (which allow rapid spread). UL and NIST research has confirmed flashover times of 3 to 5 minutes in modern homes.

147. D — Carbon monoxide produced during a fire is a colorless, odorless, toxic gas produced by the incomplete combustion of carbon-based fuels. It binds to hemoglobin with about 200 times the affinity of oxygen, causing tissue hypoxia and death at relatively low concentrations.

148. A — Type IV (heavy timber) construction relies on large cross-section wood members that resist fire damage through a self-protective char layer. The mass of the timbers slows burn-through and allows the structure to support loads longer in a fire than lighter wood construction.

149. B — Tilt-up concrete construction is most commonly used in single-story commercial warehouse and big-box retail structures. Concrete wall panels are cast on the ground and tilted up into position, supporting a metal or wood truss roof.

150. C — The moisture barrier in turnout gear prevents liquids and bloodborne pathogens from passing through to the inner thermal liner and the firefighter's skin. The moisture barrier is the layer responsible for chemical and pathogen protection in the ensemble.