Chapter 13 Test

Name: __________________________ Date: __________________

**Directions:** Write the correct letter on the blank before each question.

**Objective 1:** Describe reasons for tactical ventilation.

1. What are the three incident priorities when performing tactical ventilation? (733)
   - A. Extinguishment, personnel safety, risk mitigation
   - B. Resource management, life safety, extinguishment
   - C. Life safety, salvage operations, pumper management
   - D. Life safety, incident stabilization, property conservation

2. Which of the following is a reason for performing tactical ventilation? (733)
   - A. Decreasing reliance on fire streams
   - B. Decrease costs of fireground operations
   - C. Reducing potential extreme fire behavior
   - D. Reducing need for interior fire operations

3. Incident stabilization means: (733)
   - A. reducing interior temperatures.
   - B. increasing oxygen concentration.
   - C. controlling and extinguishing the fire in stages.
   - D. increasing the number of smoke-free paths of egress.

4. When performing tactical ventilation, the highest incident priority is: (733)
   - A. life safety.
   - B. risk mitigation.
   - C. extinguishment.
   - D. incident stabilization.
5. Which statement about tactical ventilation is MOST accurate? (733)
   A. Tactical ventilation must be performed before fire attack.
   B. Tactical ventilation is implemented after the fire is confined.
   C. Tactical ventilation can be combined with fire attack to stabilize an incident.
   D. Tactical ventilation should not begin until the incident is stabilized.

6. Tactical ventilation reduces fire damage in structures and limits water damage because it: (734)
   A. focuses on the use of foam to fight interior fires.
   B. allows for the use of fire streams with lower pressures.
   C. increases speed with which interior fires can be extinguished.
   D. allows salvage operations to begin simultaneously with fire attack.

Objective 2:
Identify considerations that affect the decision to ventilate.

Objective 3:
Explain the critical fire behavior indicators present during tactical ventilation.

7. Which characteristic of modern single-family residential construction reduces firefighter access and increases potential exposure risks? (735)
   A. Smaller lot sizes
   B. Open floor plans
   C. Larger structure sizes
   D. Composite construction material

8. Which of the following is a characteristic of older structure construction? (735)
   A. Smaller lot sizes
   B. Larger structure sizes
   C. Wall cavities filled with synthetic insulation
   D. Windows that could be opened for ventilation
9. Which characteristic of modern construction produces large quantities of toxic, combustible gases during a fire? (736)
   A. Energy efficient designs
   B. Treated wood components
   C. Lightweight structural components
   D. Use of plastics and other synthetic materials

10. Which of the following is a reason that modern construction may tend to contain fires for longer periods of time? (736)
    A. Smaller lot sizes
    B. Energy efficient designs
    C. Increased fire load of decorative items
    D. Use of real wood and granite finishings

11. Which fire behavior indicator can provide an indication of interior fire conditions by observing its volume, location, color, density, and movement? (737)
    A. Heat
    B. Smoke
    C. Flame
    D. Air flow

12. Velocity, turbulence, and direction are indicators of: (737)
    A. flame.
    B. smoke.
    C. air flow.
    D. air pressure.

13. In a structure fire, what part of the flow path is an open doorway? (737)
    A. Inlet vent
    B. Outlet vent
    C. Lower vent
    D. Upper vent

14. Which fire behavior indicator provides visual indicators such as blistering paint or crazed glass? (738)
    A. Heat
    B. Flame
    C. Smoke
    D. Air flow
15. Which fire behavior indicator provides visual indicators such as the size and location of the fire? (738)
   A. Heat
   B. Smoke
   C. Flame
   D. Air flow

16. The effect or lack of effect of fire streams indicates the size and extent of the fire when observing: (738)
   A. heat.
   B. flame.
   C. smoke.
   D. air flow.

17. Which of the following causes air flow? (737)
   A. Combustion of interior finishings
   B. Introduction of oxygen into the burning materials
   C. Escape of gases and flames from burning materials
   D. Pressure differentials inside and outside compartment

18. Which of the following factors determines the initial severity and extent of a fire? (739)
   A. Adjacent exposures
   B. Number of responding units
   C. Availability of a water supply for suppression
   D. Activation of fire detection and suppression systems

19. Which of the following factors is a primary reason that firefighters should not create tactical ventilation openings in an uncoordinated manner? (739)
   A. Can spread fire to uninvolved areas
   B. May damage roof of structure by creating openings
   C. Can cause fire streams to have negative affect on fire
   D. Creating openings does unnecessary damage to the structure

20. Which of the following personnel determines if ventilation is necessary? (739)
   A. Battalion chief
   B. Senior firefighter
   C. Incident Commander
   D. Any firefighter can make the determination
21. Which of the following factors have a bearing on deciding where to ventilate? (740)
   A. Number of bystanders
   B. Cost of ventilation operations
   C. Availability of rehabilitation facilities
   D. Indications of potential structural collapse

22. Which of the following weather conditions has the most influence on ventilation operations? (740)
   A. Wind
   B. Precipitation
   C. Temperature
   D. Atmospheric pressure

23. Ventilation that causes heat, smoke, and fire to be discharged through wall openings below the highest point of the building creates danger because: (741)
   A. multiple ventilation points will be created from the openings.
   B. oxygen levels will be increased for the upper levels of the fire.
   C. fire streams will be unable to reach the higher levels of the fire.
   D. rising gases will ignite portions of the building above exhaust point.

24. A small structure fire that requires ventilation consisting of opening doors and windows requires at minimum: (742)
   A. two firefighters.
   B. three firefighters.
   C. four firefighters.
   D. five firefighters.
Objective 4:
Define horizontal and vertical ventilation.

Objective 5:
Explain the means for achieving horizontal and vertical ventilation.

25. Cutting a hole in the roof above the fire or opening existing roof access doors, scuttles, or skylights are all examples of: (742)
   A. inlet ventilation.
   B. outlet ventilation.
   C. vertical ventilation.
   D. horizontal ventilation.

26. Opening doors or windows is an example of: (743)
   A. natural ventilation.
   B. vertical ventilation.
   C. hydraulic ventilation.
   D. mechanical ventilation.

27. The means of mechanical ventilation involve pulling the smoke and fire gases out through an opening and pushing ___ into the structure and displacing the smoke and fire gases. (743-744)
   A. oxygen
   B. fresh air
   C. a roof hook
   D. a rotary saw

28. Hydraulic ventilation involves using a spray nozzle set on a ___ pattern to draw the smoke out an opening such as a window or door. (744)
   A. fog
   B. fan
   C. vertical
   D. horizontal
29. Allowing natural air currents and pressure differences to move smoke and heat out of the building is natural: (745)
   A. exhaust ventilation.
   B. vertical ventilation.
   C. hydraulic ventilation.
   D. horizontal ventilation.

Objective 6:
Describe the types of horizontal ventilation.

30. Which type of ventilation requires no additional personnel or equipment to set up and maintain? (745)
   A. Vertical
   B. Hydraulic
   C. Natural horizontal
   D. Mechanical horizontal

31. Use of smoke ejectors to expel smoke and draw fresh air into a structure is a use of: (745)
   A. positive-pressure ventilation (PPV)
   B. positive-exhaust ventilation (PEV)
   C. negative-exhaust ventilation (NEV)
   D. negative-pressure ventilation (NPV)

32. Which side of an opening should a fan be placed for negative-pressure ventilation? (745)
   A. Leeward
   B. Interior
   C. Exterior
   D. Windward

33. When the natural flow of air currents and the currents created by the fire is insufficient to remove smoke, heat, and fire gases, what type of ventilation is necessary? (745)
   A. Vertical
   B. Hydraulic
   C. Protected
   D. Mechanical
34. Why must the open areas around a smoke ejector be properly sealed? (746)
   A. To prevent expelling fire gases from the building.
   B. To prevent air from recirculating back into the building.
   C. To prevent smoke from being exhausted through the roof.
   D. To prevent overheating of the smoke ejector and causing a fire.

35. Positive-pressure ventilation (PPV) exhaust openings vary with the size of the entry opening and the: (746)
   A. capacity of hose lines.
   B. capacity of the blower used.
   C. number of personnel on site.
   D. number of compartments in the structure.

36. Once an exhaust opening has been created, it is important that the cone of air from the blower: (746)
   A. blows towards the fire.
   B. blows away from the fire.
   C. completely covers the doorway opening.
   D. completely blocks the doorway opening.

37. When ventilating a multistory building, it is best to apply positive-pressure ventilation (PPV): (747)
   A. on the floor with the least smoke.
   B. on the floor with the most smoke.
   C. at the highest point of the structure.
   D. at the lowest point of the structure.

38. To perform hydraulic ventilation, a fog nozzle should be set on a wide fog pattern to cover what percent of the opening through which the smoke will be drawn or pulled? (750)
   A. 15 to 20
   B. 45 to 50
   C. 55 to 60
   D. 85 to 90
39. Which of the following may occur if the effects of horizontal ventilation are disturbed? (751)
   A. Fire intensity increases
   B. Air currents are established
   C. Oxygen concentration decreases
   D. Structure becomes unpressurized

40. Which of the following is an advantage to using mechanical ventilation? (751)
   A. Increases control of air flow
   B. Decreases control of air flow
   C. Speeds the removal of contaminants
   D. Increases availability of water supply

Objective 7:
Describe the types of vertical ventilation.

41. Offensive vertical ventilation is intended to aid in reaching and: (752)
   A. extinguishing the fire.
   B. stopping the spread of fire.
   C. containing the fire to one area of the structure.
   D. determining the effect on exposures to the fire.

42. What should a firefighter do before stepping off a ladder, parapet wall, or other place of safety onto the roof of a burning building, especially if the roof surface is obscured by smoke or darkness? (754)
   A. Ensure the safety of all personnel who are assisting.
   B. Direct a fire stream into an existing vertical exhaust opening.
   C. Sound the roof for structural integrity by striking with an axe.
   D. Direct a fire steam into an existing horizontal exhaust opening.

43. An inspection hole should be cut before cutting any type of ventilation hole in the roof in an attic or cockloft fire to: (756)
   A. ensure roof is safe.
   B. ensure minimal secondary damage.
   C. determine the fire location and direction of travel.
   D. determine at least two means of egress from the roof.
Objective 8: Recognize other types of ventilation situations.

44. When transporting a rotary saw or chain saw to or from the point of operation, it is safest to: (755)
   A. turn it off.
   B. turn it upright.
   C. carry it in its proper case.
   D. move it up or down the ladder quickly.

45. Ensuring the only required openings for ventilation are made is the responsibility of the: (755)
   A. company officer.
   B. incident commander.
   C. code enforcement officer.
   D. roof ventilation team leader.

46. Why may arched roofs prevent roof ladders from lying flat? (757)
   A. Roof ladders too long.
   B. Curvature of the roof.
   C. Roof ladders too curved.
   D. Lack of curvature of the roof.

47. What type of cut is used to create a fire break that stops the spread of fire in common attic structures or large structures? (758)
   A. Trench cut
   B. Vertical cut
   C. Exhaust cut
   D. Offensive cut

48. When the main body of the fire is too great to extinguish, and only after the offensive vertical ventilation opening has been made, a trench cut must be created ahead of the advancing fire by at least: (758)
   A. 10 feet.
   B. 20 feet.
   C. 30 feet.
   D. 40 feet.
49. If a trench cut is created improperly, it will place firefighters in the very dangerous position of working:  (759)
   A. behind the fire.
   B. ahead of the fire.
   C. on top of the fire.
   D. on plane with the fire.

50. Which of the following is a factor that reduces effectiveness of vertical ventilation?  (759)
   A. Trench cuts too small
   B. Personnel working ahead of the fire
   C. Fire streams directed into ventilation openings
   D. Improper location of the horizontal ventilation opening

51. Basement fires can be challenging without effective ventilation because firefighters have to get to the seat of the fire:  (760)
   A. without the necessary tools.
   B. through intense rising heat and smoke.
   C. with a limited number of responding personnel.
   D. without communication with the incident commander.

52. What factor makes high-rise fires life safety considerations an even higher priority?  (761)
   A. More windows
   B. Fewer windows
   C. More occupants
   D. Fewer occupants

53. Which of the following occurs to heated smoke and fire gases when they stop rising, become cooled to the temperature of the surrounding air, and spread horizontally?  (761-762)
   A. Stratify
   B. Solidify
   C. Sounded
   D. Stabilization
Objective 9:

Explain the effects of building systems on tactical ventilation.

54. Combustibles adjacent to the ductwork of an HVAC system should be checked in case ___ has caused additional fires. (763)
   A. conduction
   B. convection
   C. concentration
   D. circumvention

55. The automatic closure of doors, petitions, windows, and HVAC systems are methods of: (763)
   A. compartmentalizing a structure.
   B. confining fire operations personnel.
   C. evacuating occupants of the structure.
   D. verifying combustibles adjacent to the fire floor.

56. Which of the following should be indicated by a smoke control system control panel? (763-764)
   A. What initiated the fire
   B. Who activated the alarm
   C. Where the alarm originated
   D. When the system will turn off

57. What do modern buildings have built-in that can contribute to the spread of smoke and toxic gases throughout a structure? (763)
   A. HVAC systems
   B. Exhaust systems
   C. Automatic systems
   D. Smoke control systems

58. Operating built-in smoke control systems in a high-rise or a shopping mall with open atria should be the responsibility of: (763-764)
   A. any security officer on duty.
   B. any firefighter on the scene.
   C. only code enforcement officers.
   D. only building engineers or maintenance superintendents.