Chapter 20 Test

Objective 1:
Describe fire alarm systems.

1. The purpose of a fire alarm system is to: (1178)
   A. prevent flashover in the room of fire origin.
   B. control fires in early stages while still small.
   C. notify building occupants of an emergency condition.
   D. provide means for deploying fire hoses remote from fire apparatus.

2. Which alarm system component serves as the “brain” for the fire alarm system? (1178)
   A. Initiating device
   B. Primary power supply
   C. Notification appliance
   D. Fire alarm control panel

3. The fire alarm control panel: (1178)
   A. is required to be red with white lettering.
   B. contains electronics that control and monitor the fire alarm system.
   C. senses the products of combustion or other hazardous conditions.
   D. notifies occupants of an emergency condition through visual text or symbols.

4. The primary power to the alarm system is obtained from: (1178)
   A. auxiliary generators.
   B. a local utility provider.
   C. batteries with chargers.
   D. a special radio frequency.
5. Which fire alarm component sends a signal to the fire alarm control panel?  (1180)  
   A. Initiating device  
   B. Notification appliance  
   C. Remote annunciator panel  
   D. Textual notification appliances

6. After receiving a signal from an initiating device, the control panel activates:  (1180)  
   A. a manual pull station.  
   B. notification appliances.  
   C. secondary power supplies.  
   D. the contacts in a frangible bulb.

7. Which is the most common category of notification appliances?  (1180)  
   A. Visual  
   B. Textual  
   C. Tactile  
   D. Audible

8. Strobe lights are an example of which notification appliance category?  (1180)  
   A. Visual  
   B. Textual  
   C. Conductive  
   D. Addressable

9. The fire command center:  (1181)  
   A. senses products of combustion.  
   B. serves as the connection point for power and fire alarm circuits.  
   C. consolidates all fire protection system controls for a structure in one room.  
   D. ensures the fire alarm system will operate if the primary power supply fails.
10. Which type of alarm signaling system is designed to provide notification to building occupants on the immediate premises? (1182)
   A. Central station
   B. Remote receiving
   C. Protected premises
   D. Supervising station

11. The fire alarm control panel in a (an) ___ system is not capable of identifying the initiating device that triggered the alarm. (1182)
   A. coded alarm
   B. noncoded alarm
   C. addressable alarm
   D. annunciated alarm

12. A zoned/annunciated alarm system: (1183)
   A. allows for quick location and correction of malfunctions in the system.
   B. is not capable of identifying the initiating device that activated the alarm.
   C. enables responders to identify the general location of alarm activation.
   D. displays the location of each initiating device on a fire alarm control panel.

13. Which type of protected premises alarm system allows responders to pinpoint the specific initiating device that was activated? (1183)
   A. Zoned alarm
   B. Noncoded alarm
   C. Addressable alarm
   D. Annunciated alarm

14. A ___ alarm system continuously monitors a remote location. (1183)
   A. passive
   B. preaction
   C. supervising station
   D. protected premises
15. Which of the following supervising station alarm systems is connected to a municipal fire alarm system? (1184)
A. Proprietary system
B. Protected premises
C. Auxiliary alarm system
D. Central station system

16. Which type of supervising station alarm system is an extension of the municipal alarm circuit into protected property? (1184)
A. Shunt system
B. Municipal utility
C. Proprietary system
D. Local energy system

17. How are remote receiving systems connected to the emergency services telecommunications center? (1184)
A. A runner service
B. Dedicated system wiring
C. The municipal alarm box system
D. A telephone line or dedicated radio frequency

Objective 2: Identify alarm-initiating devices.

18. Which of the following is a manually-activated alarm-initiating device? (1185)
A. House line
B. Pull station
C. Fusible link
D. Smoke detector

19. Which of the following statements about fixed temperature heat detectors is MOST accurate? (1186)
A. Fixed temperature heat detectors are most prone to false activations.
B. Fixed temperature heat detectors should be installed at eye level or below.
C. Fixed temperature heat detectors use photoelectric cells to initiate an alarm signal.
D. Fixed temperature heat detectors can be the slowest to activate, depending on installation location.

20. Fixed-temperature heat detectors are activated by expansion of heated material, changes in resistance of heated material, and:
A. initiation of water flow.
21. A frangible bulb heat detector is activated when: (1186-1187)
   A. a beam of light is reflected onto a photoelectric cell to complete a circuit.
   B. ionized molecules make air less conductive, causing a decrease in current.
   C. a chemical pellet melts, releasing a pressurized plunger to complete a circuit.
   D. a small glass vial breaks when heated, allowing electrical contacts to complete a circuit.

22. Which heat detector uses two metals, one which expands faster than the other when heated, to break a circuit and send a signal to the fire alarm control panel? (1187)
   A. Bimetallic detector
   B. Ultraviolet detector
   C. Fusible link detector
   D. Continuous line detector

23. Which alarm-initiating device is activated by a rise in temperature of 12°F to 15°F (7°C to 8°C) in one minute? (1188)
   A. Infrared wave detector
   B. Continuous line detector
   C. Photoelectric cell detector
   D. Rate-of-rise heat detector
24. Which of the following statements about rate-of-rise detectors is MOST accurate? (1188)
   A. Rate-of-rise detectors are not suitable for areas where arc welding is done.
   B. Rate-of-rise detectors are also known as visible products-of-combustion detectors.
   C. Rate-of-rise detectors are less reliable than fixed-temperature detectors, and are frequently subject to false activations.
   D. Rate-of-rise detectors can initiate an alarm at a temperature below that required for initiating fixed temperature devices.

25. Which rate-of-rise detector uses self-contained pneumatic sensors to monitor specific locations? (1189)
   A. Waterflow alarm detector
   B. Rate-compensated heat detector
   C. Pneumatic rate-of-rise line detector
   D. Pneumatic rate-of-rise spot detector

26. Which type of rate-of-rise detector uses a system of thermistors that produce a change in electrical resistance when exposed to heat? (1190)
   A. Rate-compensated detector
   B. Electronic spot-type heat detector
   C. Pneumatic rate-of-rise line detector
   D. Pneumatic rate-of-rise spot detector

27. Which of the following statements about smoke detectors is MOST accurate? (1190)
   A. Smoke detectors initiate an alarm much slower than heat detectors.
   B. In most cases, smoke detectors are installed in nonresidential and large multi-family occupancies.
   C. Smoke detectors are self-contained units capable of both detecting smoke and sounding an alarm.
   D. Typically, smoke detectors are installed in single-family residences and smaller multi-family occupancies.
28. Which of the following statements about photoelectric smoke detectors is MOST accurate? (1190)
   A. Photoelectric smoke detectors are ineffective at detecting Class C fires.
   B. Photoelectric smoke detectors use a photoelectric cell coupled with ambient room light.
   C. Photoelectric smoke detectors must be manually reset when conditions return to normal.
   D. Photoelectric smoke detectors usually respond more quickly to smoldering fires than do ionization-type detectors.

29. Which type of photoelectric smoke detector focuses a beam of light across the monitored area into a cell, and initiates an alarm when the beam is obscured? (1191)
   A. Ionization smoke detector
   B. Projected-beam smoke detector
   C. Light-emitting diode smoke detector
   D. Refractory application smoke detector

30. Which of the following statements about ionization smoke detectors is MOST accurate? (1191)
   A. Ionization smoke detectors detect tiny amounts of radioactive material emitted by burning fuel.
   B. Ionization smoke detectors generally respond faster to smoldering than to flaming fires.
   C. Ionization smoke detectors detect products of combustion using tiny amounts of radioactive material.
   D. Ionization smoke detectors are sensitive to sunlight, and are usually installed in fully enclosed areas.

31. Which type of alarm-initiating device is activated in the presence of carbon dioxide, carbon monoxide, and other gases produced by fires in confined spaces? (1193)
   A. Heat detector
   B. Flame detector
   C. Fusible detector
   D. Fire-gas detector
32. Which of the following statements about power sources of smoke detectors/alarms is MOST accurate? (1193)
   A. Smoke detectors/alarms may be powered only by batteries.
   B. Hard-wired alarms are more reliable in areas with frequent power failures.
   C. Smoke detectors/alarms may be powered only by dedicated electrical feeds.
   D. State, provincial, and local laws may require that smoke detectors/alarms be hard-wired.

33. Which of the following statements about flame detectors is MOST accurate? (1193)
   A. Infrared flame detectors can be designed to be sensitive to only light produced by hostile fires.
   B. Ultraviolet flame detectors are recommended for areas where intense mercury-vapor lamps are used.
   C. Infrared flame detectors are virtually insensitive to sunlight, and can be used in areas not suitable for ultraviolet detectors.
   D. Ultraviolet flame detectors are virtually insensitive to sunlight, and can be used in areas not suitable for infrared detectors.

34. Which of the following statements about fire-gas detectors is MOST accurate? (1194)
   A. Fire-gas detectors are also called visible products-of-combustion detectors.
   B. Fire-gas detectors initiate alarm signals faster than any other type of detector.
   C. Fire-gas detectors can be designed to be sensitive to only gases produced by hostile fires.
   D. For general detection, fire-gas detectors monitor levels of hydrogen chloride and hydrogen cyanide in the air.
Objective 3: Explain the ways automatic sprinkler systems work.

35. Which of the following statements about sprinkler systems is MOST accurate? (1194)
   A. Sprinkler system design and installation criteria are found in NFPA® 14.
   B. The two general types of sprinkler systems are integrated and disintegrated.
   C. Sprinkler systems are designed to provide means for rapid deployment of hose lines.
   D. Sprinkler systems are designed to extinguish a fire or prevent its spread until firefighters arrive.

36. A sprinkler system minimum design area is based on: (1195)
   A. the response time of the nearest fire station.
   B. the size of pipe available to be used in the installation.
   C. the minimum number of sprinklers that might be expected to activate.
   D. the assumption that only a portion of the sprinklers will activate at one time.

37. Which of the following statements about the effects of sprinkler systems on life safety is MOST accurate? (1195)
   A. Sprinkler systems have little effect of the safety of firefighters.
   B. Sprinkler systems alone are enough to protect occupants from smoke.
   C. Sprinklers are ineffective in reducing the upward spread of a fire in multistory buildings.
   D. Sprinklers discharge water directly onto a fire while it is still small, limiting the products of combustion.

38. The ___ is the vertical piping to which the one-way check valve, alarm valve, and main drain are attached. (1196)
   A. riser
   B. feed main
   C. cross main
   D. fire department connection
39. The sprinkler system feed main is: (1196)
   A. the direct service to a number of branch lines.
   B. the pipe connecting the riser to the cross mains.
   C. vertical piping to which other components are attached.
   D. the piping that connects a spray nozzle to the cross mains.

40. Which of the following statements about sprinklers is MOST accurate? (1196)
   A. Sprinklers open in response to water pressure.
   B. Sprinklers are fixed spray nozzles opened individually in response to heat.
   C. Sprinklers are rated according to the flow rate at which they are designed to operate.
   D. Early-suppression fast-response sprinklers open nearly twice as fast as traditional sprinklers.

41. Sprinklers’ temperature ratings can be identified by: (1197)
   A. the size of the frangible bulb.
   B. the color-coded sprinkler frame arms.
   C. the temperature stamped on the chemical pellet.
   D. the temperature stamped on a brass tag hung on the stem.

42. Which sprinkler release mechanism has a valve cap held in place by a small piece of solder that melts to release pressure and open the valve? (1198)
   A. Fusible link
   B. Frangible bulb
   C. Bimetallic strip
   D. Chemical pellet

43. Sprinkler deflectors serve to: (1198)
   A. direct water flow downward.
   B. support the piping and sprinklers.
   C. protect sprinklers from dust and debris.
   D. direct water flow upward toward the ceiling.
44. Which type of sprinkler deflector discharges most of the water to one side, and is used when it is necessary to install a sprinkler on the wall or at the side of a room? (1198)
   A. Flush
   B. In-rack
   C. Sidewall
   D. Pendant

45. Which sprinkler orientation type is installed in a housing within the ceiling and has all or part of the sprinkler (except the threaded shank) in the housing? (1198)
   A. Flush
   B. Upright
   C. Recessed
   D. Concealed

46. In accordance with NFPA® 13, a sprinkler storage cabinet must contain: (1198)
   A. the inspector’s test valve.
   B. building plans and system diagrams.
   C. six sprinklers and a sprinkler wrench.
   D. a copy of the department preincident plan.

47. The main control valve is used to: (1200)
   A. simulate actuation of the system.
   B. stop supplying water to the system.
   C. initiate an alarm when water begins to flow.
   D. drain water from the system for maintenance.

48. Which type of indicating valve extends horizontally through the wall with the target and valve operating nut outside of the building? (1201)
   A. Outside stem and yoke
   B. Post indicator valve (PIV)
   C. Wall post indicator valve (WPIV)
   D. Post indicator valve assembly (PIVA)
49. Which type of indicating valve has a hollow metal post housing the valve stem with a moveable plate visible through a small glass window on the side? (1200-1201)
   A. Outside stem and yoke
   B. Post indicator valve (PIV)
   C. Circular disk-and-plate valve
   D. Post indicator valve assembly (PIVA)

50. The sprinkler system operating alarm test valve: (1201)
   A. may be used to check the water supply.
   B. is used to simulate actuation of one sprinkler.
   C. is located in a remote part of the sprinkler system.
   D. can be used to simulate actuation of the sprinkler system.

51. Which sprinkler system operating valve is equipped with the same size orifice as a sprinkler and is used to simulate the actuation of one sprinkler? (1201)
   A. Alarm test valve
   B. Main drain valve
   C. Main control valve
   D. Inspector’s test valve

52. What is the purpose of a sprinkler system waterflow alarm? (1202)
   A. Initiate alarm when water begins to flow.
   B. Initiate alarm when water flow exceeds rated flow.
   C. Initiate alarm when water reaches end of sprinkler lines.
   D. Initiate alarm when water pressure exceeds rated pressure.

53. Which of the following statements about the sprinkler system water supply is MOST accurate? (1202)
   A. The water supply must be designed to supply all sprinklers on the system.
   B. The fire department cannot connect to the sprinkler system during operation.
   C. A fire pump is typically incorporated into the system to ensure adequate water pressure and volume.
   D. The minimum water supply must deliver the required volume of water to the sprinkler nearest the control valve at the system rated pressure.

54. Which of the following statements about fire department connections is MOST accurate? (1203)
   A. Fire department connects should be supplied from pumpers with a capacity of 100 gpm (400 L/min) or greater.
   B. Fire department preincident plans may identify the pressure at which the sprinkler system will be supported by pumpers.
C. Fire department pumpers supplying connects should connect to hydrants on the same main as the sprinkler system supply.
D. Fire department connect check valves allow sprinkler system water to flow freely back through the fire department connect.

_______ 55. Which type of sprinkler system contains water under pressure at all times so a sprinkler will immediately discharge water spray and activate an alarm? (1204)
A. Deluge system
B. Dry-pipe system
C. Wet-pipe system
D. Clean-agent system

_______ 56. What is the function of a retard chamber? (1204)
A. Quickly expels air from the sprinkler piping
B. Keeps water out of piping until fire actuates a sprinkler
C. Prevents water flowing back into fire department connection
D. Catches excess water sent during momentary water pressure surges

_______ 57. In which type of sprinkler system does air or nitrogen under pressure replace the water in the sprinklers above a valve? (1204)
A. Deluge system
B. Dry-pipe system
C. Wet-pipe system
D. Water curtain system
58. Which of the following statements about dry-pipe sprinkler systems is MOST accurate? (1205)
   A. Dry-pipe systems require pressurized air or nitrogen to hold dry-pipe valves open.
   B. A disadvantage of dry-pipe systems is that they do not signal an alarm when discharged.
   C. Normally, the air-pressure gauge and water-pressure gauge should show the same pressure reading.
   D. Accelerators and exhausters are quick-opening devices that allow air to exit and water to enter the pipes quickly.

59. Which of the following BEST describes deluge sprinkler systems? (1205)
   A. Use extinguishing agent other than water for use in specific occupancies
   B. Contain air or nitrogen under pressure, air escapes when sprinkler system is initiated
   C. Contain water under pressure, two gauges read pressure above and below activation valve
   D. Designed with open-head sprinklers to quickly supply a large volume of water to the protected area

60. Which of the following system types is typically used where it is important to prevent water damage? (1207)
   A. Dry-pipe system
   B. Preaction system
   C. Water-mist system
   D. Partial deluge system

61. Which of the following statements about residential sprinkler systems is MOST accurate? (1208)
   A. Residential sprinkler systems are generally more costly than commercial systems.
   B. Residential sprinkler systems operate more slowly and at higher temperatures than do commercial systems.
   C. Residential sprinkler systems are expected to prevent flashover, and improve the chance for occupants to escape.
   D. Residential sprinkler systems must be connected to a water source separate from the domestic water service.
Objective 4:
Describe standpipe and hose systems.

62. Which of the following statements about standpipe and hose systems is MOST accurate? (1209)
   A. Standpipe and hose systems can take the place of sprinkler systems, or lessen the need for sprinklers.
   B. Standpipe systems give no advantage in one-story structures, and are rarely installed in these structures.
   C. In many high-rise buildings, a standpipe is the primary means for manual extinguishment and overhaul of a fire.
   D. Standpipe systems are designed only for use by building occupants, they do not serve the needs of firefighters.

63. Which of the following statements BEST describes standpipe and hose systems? (1210)
   A. Standpipe systems may not be effective on small fires in their early stages.
   B. Standpipe systems normally discharge water outside of the protected building.
   C. Design and installation of standpipe systems and hose stations are described in NFPA® 13 and NFPA® 14.
   D. Standpipe system components commonly include a control panel, alarm actuator, cross mains, and an inspector’s test valve.

64. Which class of standpipe system is equipped with a 1 ½ inch (38 mm) hose and lightweight twist-type shutoff nozzle stored on a hose rack system? (1210)
   A. Class I
   B. Class II
   C. Class III
   D. Class IV
65. Which statement about Class III standpipe systems is MOST accurate? (1211)
   A. Class III standpipe systems are also referred to as house lines.
   B. Class III standpipe systems provide two 2 ½ inch (65 mm) hose connections on a single riser.
   C. Class III standpipe systems are designed to take the place of automatic sprinkler systems.
   D. Class III standpipe systems must allow both Class I and Class II services to be used simultaneously.

66. Which of the following statements BEST describes an automatic dry standpipe system? (1212)
   A. Water is maintained in the system only to identify leaks.
   B. Water pressure is maintained in the system at all times.
   C. Water is admitted to the system upon opening of the hose valve.
   D. Water is admitted to the system when the dry pipe valve is opened at the hose station.

67. Which type of standpipe system requires activation of a control device to provide water at hose connections? (1212)
   A. Manual dry
   B. Automatic dry
   C. Automatic wet
   D. Semiautomatic dry

68. Which of the following statements BEST describes a manual wet standpipe system? (1212)
   A. The system has a permanently attached water supply.
   B. The water supply is capable of meeting demand automatically.
   C. The system is maintained full of water, but has no water supply.
   D. The water supply enters the system when the dry-pipe valve is activated at the hose station.
Objective 5: Explain the ways smoke management systems work.

69. Which of the following statements about smoke control is MOST accurate? (1213)
   A. Most smoke management systems are ineffective if building occupants are sleeping or impaired.
   B. The purpose of smoke control is to quickly remove smoke from and introduce fresh air into the fire area.
   C. Smoke management systems are not activated until the structure has been evacuated and searched.
   D. Smoke control is any effort to change pressure in spaces adjacent to the fire area to compartmentalize or exhaust smoke.

70. Which of the following is an advantage of dedicated smoke control systems? (1214)
   A. The system requires less space for mechanical equipment.
   B. All system features are exercised during day-to-day operations.
   C. There is less chance of component failure due to regular use and maintenance.
   D. The system is less likely to be affected by modification or failures of other building systems.

71. One advantage of nondedicated smoke control systems is: (1214)
   A. the elaborate nature of the system controls.
   B. less chance of component failure due to regular use and maintenance.
   C. the operation and control are simpler than dedicated smoke control systems.
   D. nondedicated systems are less likely to be affected by modification or failure of other building systems.

72. Which smoke control system/method uses barriers with sufficient fire endurance to provide protection against the spread of fire and smoke? (1214)
   A. Passive
   B. Dilution
   C. Opposed air flow
   D. Zoned smoke control
73. How does the exhaust method control smoke? (1215)
   A. Uses mechanical fans and ventilation to create a pressure difference across a barrier.
   B. Uses high velocity air aimed at the area of origin to keep smoke from migrating into unaffected areas.
   C. Uses barriers with sufficient fire endurance to provide protection against the spread of fire and smoke.
   D. Uses mechanical ventilation and the properties of smoke to collect smoke at the highest point in a large space.

74. Where is the opposed air flow method of smoke control typically used? (1215)
   A. Areas with existing barriers, such as stairwells with doors or HVAC ductwork with dampers.
   B. Within the smoke control station, or other areas where the air flow will dilute the concentration of smoke.
   C. Large spaces where smoke migration is limited by opposed air flow, such as subway and railroad tunnels.
   D. Large spaces were the smoke can be maintained at a level of 6 to 10 feet (2 m to 3 m) above the highest occupied floor.

75. Which of the following statements about firefighters’ smoke control stations is MOST accurate? (1215)
   A. All smoke control equipment must be fully automated to prevent manual shutdown.
   B. The firefighters’ smoke control station must be accessible by all building occupants at all times.
   C. Each piece of smoke control equipment should be controlled individually, rather then by zones.
   D. The firefighters’ smoke control station should contain a building diagram indicating the location of smoke control equipment.