

# Chapter 16 Test

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

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

- \_\_\_\_\_ 1. Which type of building material is affected by size and moisture content during fire conditions? (783) [5.3.2]
- A. Glass
  - B. Wood
  - C. Masonry
  - D. Concrete
- \_\_\_\_\_ 2. How does the size of a wooden structural member affect how it reacts to fire? (783) [5.3.2]
- A. Size has no effect on how easy a piece of wood will ignite.
  - B. Heavy timbers remain strong even after exposure to direct flame.
  - C. Heavy timbers lose structural stability quickly when exposed to direct flame.
  - D. Engineered wood products burn slower than natural wood because they have a lower moisture content.
- \_\_\_\_\_ 3. How does heat affect masonry? (784) [5.3.2]
- A. Bricks may experience spalling when they are heated.
  - B. Bricks will crumble after minimal exposure to heat and flame.
  - C. Stones and concrete will crumble after exposure to direct flame.
  - D. Stones and concrete may experience spalling when they are heated.
- \_\_\_\_\_ 4. Cast iron may crack or shatter when it is: (786) [5.3.2]
- A. heated indirectly.
  - B. rapidly cooled with water.
  - C. in contact with direct flames.
  - D. used as a decorative structural element.

- \_\_\_\_\_ 5. When heated, steel structural members tend to: (787) [5.3.2]
- A. spall.
  - B. crumble.
  - C. elongate and push walls outward.
  - D. contract and cause walls to fall inward.
- \_\_\_\_\_ 6. Which factor is likely to affect the speed with which a steel structural member fails under fire conditions? (787) [5.3.2]
- A. Age
  - B. Size
  - C. Exposure to foam extinguishing agents
  - D. Where the steel is located in the structure
- \_\_\_\_\_ 7. How does reinforced concrete react to exposure to fire? (790) [5.3.2]
- A. It takes longer to fail after exposure to fire.
  - B. It contracts and forces building walls inward.
  - C. It elongates and pushes building walls outward.
  - D. It performs well, but can lose strength through spalling.
- \_\_\_\_\_ 8. Which type of building material is used to protect other materials because its moisture content gives it excellent heat resistance? (790) [5.3.2]
- A. Reinforced steel
  - B. Lath and plaster
  - C. Gypsum wallboard
  - D. Reinforced concrete
- \_\_\_\_\_ 9. What is a concern about lath and plaster during a fire? (790) [5.3.2]
- A. Stretches when heated
  - B. Releases toxic gases when heated
  - C. Shows signs of spalling when exposed to fire
  - D. Conceals hidden fires and adds fuel to the fire

- 
- \_\_\_\_\_ 10. Which statement describes how glass will react under fire conditions? (791) [5.3.2]
- A. Heated glass may crack when water is applied.
  - B. Glass can add a significant amount of fuel to the fire.
  - C. It will break or melt, causing the surrounding walls to weaken.
  - D. Glass generally is not affected by fire conditions, but may be broken during forcible entry.
- \_\_\_\_\_ 11. Which type of building material can produce toxic gases and rapidly deteriorate under fire conditions? (793) [5.3.2]
- A. Steel
  - B. Glass
  - C. Lath and plaster
  - D. Oriented strand board (OSB)
- \_\_\_\_\_ 12. Which building material can potentially be harmful to firefighters because it contains a glue called urea formaldehyde that gives off a hazardous gas when it is heated? (794) [5.3.2]
- A. Plywood
  - B. Cellulose
  - C. Mineral wool
  - D. Particle board
- \_\_\_\_\_ 13. When should firefighters begin considering the potential that a building will collapse? (794) [5.3.2]
- A. During preincident surveys and size-up
  - B. Once the fire reaches the growth stage
  - C. Immediately upon arrival at the incident
  - D. Once the fire reaches the fully involved stage
- \_\_\_\_\_ 14. Which type of collapse is common for a Type V construction building? (795) [5.3.2]
- A. Balloon collapse
  - B. Walls collapsing inward
  - C. Collapse of a single compartment
  - D. Walls collapsing in one piece or crumbling

- 
- \_\_\_\_\_ 15. Why can abandoned buildings pose great danger of fire and collapse? (797) [5.3.2]
- A. The interior may be gutted and altered.
  - B. The interior may be compartmentalized.
  - C. The exterior may be made of lightweight components.
  - D. The exterior may be covered with flammable materials.
- \_\_\_\_\_ 16. In which stage of fire development does structural collapse become likely due to the weakened state of structural members and buildup of water? (797) [5.3.2]
- A. Incipient
  - B. Growth
  - C. Fully developed
  - D. Decay
- \_\_\_\_\_ 17. How do a building's contents affect fire growth and structural collapse? (798) [5.3.2]
- A. Contents create barriers that help block fire spread.
  - B. Contents can retain water and increase the stress on structural members.
  - C. Contents help distribute the weight in the building evenly, which adds structural stability.
  - D. Contents burn more slowly than structural members, so it takes longer for the fire to grow.
- \_\_\_\_\_ 18. Little or no water runoff from the interior of the structure can be an indicator that: (798) [5.3.2]
- A. fire suppression was effective.
  - B. fire suppression was not effective.
  - C. the structure is retaining water and at risk of collapse.
  - D. the structure is stable, because the fire has been put out.
- \_\_\_\_\_ 19. What is an indicator of structural collapse? (798) [5.3.2]
- A. Fire in the incipient stage
  - B. Distorted structural members
  - C. Absence of reinforcing tie rods
  - D. Smoke movement through windows

- 
- \_\_\_\_\_ 20. When establishing collapse zones,: (798) [5.3.2]
- A. apparatus must not be positioned in the collapse zone.
  - B. the size of the collapse zone depends on the width of the building.
  - C. interior crews should be allowed to finish tasks before exiting the structure.
  - D. the IC should wait to cordon the zones off until an offensive strategy has been adopted.
- \_\_\_\_\_ 21. Traditionally, how large is the collapse zone? (798) [5.3.2]
- A. 1½ times the width of the structure
  - B. 2½ times the width of the structure
  - C. 1½ times the height of the structure
  - D. 2½ times the height of the structure
- \_\_\_\_\_ 22. When should a collapse zone be established at a structure fire? (799) [5.3.2]
- A. After mutual aid is requested
  - B. As soon as interior operations begin
  - C. Once a defensive strategy is adopted
  - D. Before cordoning off the hot, warm, and cold zones
- \_\_\_\_\_ 23. Once it is determined that collapse is imminent,: (799) [5.3.2]
- A. the collapse zone should be cleared as soon as possible.
  - B. the interior crews should remain working until they recover all victims.
  - C. the primary search must be completed, and then the building should be evacuated.
  - D. everyone who is not directly related in suppression or rescue must leave the collapse zone.
- \_\_\_\_\_ 24. What should take place immediately after the collapse zone is cleared? (799) [5.3.2]
- A. Size-up
  - B. After-action report
  - C. Personnel accountability report
  - D. Personnel return to the staging area

- 
- \_\_\_\_\_ 25. Which statement accurately describes how building materials and configuration affect fire behavior in a structure? (800) [5.3.2]
- A. Buildings with lightweight engineered components are less likely to collapse unexpectedly.
  - B. Buildings with a high level of compartmentation are more susceptible to rapid fire spread.
  - C. Fires in structures with a low fuel load have a lower tolerance to fire and will burn hotter than other fires.
  - D. The longer the fire has burned, the more likely it is that structural integrity has been compromised.
- \_\_\_\_\_ 26. Why are buildings under construction more susceptible to fire spread? (800) [5.3.2]
- A. High fuel loads
  - B. Structurally unsound construction
  - C. Presence of Type I construction materials
  - D. Sprinklers and FDCs are not yet operational
- \_\_\_\_\_ 27. How can HVAC systems affect tactical ventilation? (800) [5.3.2]
- A. Provide fresh air to ventilation crews
  - B. Move products of combustion to unaffected areas
  - C. Cool the air in the fire room to weaken the fire's intensity
  - D. Help extinguish the fire by changing the pressure in the structure
- \_\_\_\_\_ 28. How can water from fire suppression affect a building's structural stability? (801) [5.3.2]
- A. Water has minimal effect on a structure's stability.
  - B. Water adds weight, but does not add stress to the structure.
  - C. Water weight added from suppression can cause floors to collapse.
  - D. Water has a positive impact on stability since it reduces the structure's fuel load.
- \_\_\_\_\_ 29. Overhaul operations may affect a structure's stability when: (801) [5.3.2]
- A. salvage covers are placed to protect furnishings.
  - B. ventilation fans are used to clear smoke from the area.
  - C. furniture and other movable fixtures are removed from the structure.
  - D. firefighters accidentally cut through load bearing components.