Hartford County Firefighter 1 Jones and Bartlett 3ed.

Chapter 7 Building Construction

Quiz

1. Of the following choices, which most accurately explains the difference between combustibility and thermal conductivity:
   a. Combustibility refers to whether a material will actually burn and thermal conductivity is the flash point at which the product will ignite.
   b. Combustibility refers to whether a material will actually burn and thermal conductivity describes how readily a material will conduct heat (although not actually burning itself).
   c. Combustibility and thermal conductivity are nearly synonymous, both referring to how readily a solid material will ignite.
   d. Combustibility and thermal conductivity are both needed for sustained combustion in a compartment fire.
2. Certain materials, steel in particular, expand when subject to high heat. An unrestrained steel beam will elongate at a rate of approximately 1 inch per 10 feet. If restrained, however, the steel beam will likely react in the following way:
   a. The beam will warp or twist.
   b. The beam will crack and splinter near the center and collapse.
   c. The beam will begin to melt.
   d. The beam will begin a form of pyrolysis and start to disintegrate.
3. Gypsum board is a common building material used in a wide variety of applications. Of the following statements regarding gypsum board, which one is most accurate:
   a. Because of its paper covering, fire can be expected to spread quickly across its surface contributing to early flashover.
   b. Because it is primarily a natural mineral, gypsum board is equally useful for both interior and exterior applications.
   c. Gypsum board is a poor conductor of heat and is often used to create fire stops.
   d. Gypsum board should not be used for ceilings due to its weight and hazards resulting from collapse.
4. Lightweight truss framing presents a number of hazards to firefighters. Which of the following is most correct regarding lightweight wood truss construction:
   a. Smaller diameter wood components allow greater surface to mass ratio for fire spread and shallow, pressed gusset plates result in rapid collapse conditions.
   b. Trusses are used in roof framing but not in floor framing.
   c. Trusses are used in floor framing but not in roof framing.
   d. Smaller diameter wood components result is less surface to mass ratio for fire spread and gusset plates are required to be a fire rated metal.
5. Lightweight truss assemblies generally fall into three main categories: Pitched chord truss; Parallel chord truss and Bowstring truss. Which of the following statements best summarizes all three:

a. Pitched chord are used on residential buildings. Bowstring truss are used on commercial buildings. Parallel chord are used on flat roofs only.
b. Pitched chord are used on sloped roofs. Bowstring truss are used on large commercial buildings. Parallel chord are used in both flat roof and floor assemblies.
c. Pitched chord have faster burn through times than either of the other two. Parallel chord acts more like solid dimensional lumber. Bowstring truss has shorter spans than either of the other two.
d. Pitched chord is the most stable. Bowstring truss is always identified by the curved roof. Parallel chord is always exposed on the underside.

6. When we refer to balloon frame construction which of the following are we talking about:
   a. Framework within a fabric or membrane shell building kept erect by air pressure. These portable buildings are often used as arenas and concert venues.
   b. Wood frame construction in which each floor is a complete assembly, one stacked atop another.
   c. Wood frame construction used from the 1800's to the mid 1900's where the exterior wall studs ran from basement to attic with nothing to stop vertical fire spread.
   d. Wood frame construction limited to 3 or 4 stories in which each floor was slightly larger than the floor below it.
7. The fire service uses several different types of building construction to describe and categorize each one for the purpose of identifying risks inherent to them. How many different types of basic building construction types are there:
   a. Five
   b. Four
   c. Six
   d. Eight
8. In order to make sound decisions at a building fire, three main factors regarding the building itself have to be considered by the IC. These same three factors should also be considered by officers and firefighters carrying out the various tasks involved in extinguishing the fire. The three factors are:
   a. Building height; Collapse hazards; Fire travel
   b. Collapse zones; Utilities; Weather conditions
   c. Access; water supply; age of the building
   d. Building construction; occupancy; contents
9. Two terms used to describe some wood frame construction practices are contemporary construction and legacy construction. Which of the following comparisons of the two are most accurate:
   a. Contemporary began about 1970, incorporates light weight components (sometimes trusses) and is prone to more rapid fire involvement. Legacy is considered pre 1970 and uses dimensional lumber in framing. Due to its larger size, framing components withstand the effects of fire longer than contemporary.
   b. Contemporary framing conforms to more modern building codes and is more fire resistant than older, legacy framing which may be decades old and dangerously dried out.

c. Contemporary refers to framing styles with a wider variety of building shapes such as steeply pitched roofs and multiple levels. Legacy refers to more traditional styled buildings such as colonial or cape cod designs.
d. Contemporary often use more modern building materials such as engineered wood and plastics making the building more resistant to weather damage. Legacy used traditional wood throughout and must be weather proofed during assembly.

10. A building constructed of lightweight steel truss framing and sheet metal siding, is inherently non combustible but is subject to collapse in a serious fire due to combustible contents is which type of building construction:
    a. Type I
    b. Type II
    c. Type III
    d. Type IV
11. A building constructed of primarily wood framing and wood sheathing and is the most commonly used building material is what type:
    a. Type V
    b. Type IV
    c. Type !!
    d. Type III
12. A building constructed of masonry exterior with wood interior framing and containing many voids allowing fire to travel is what type:
    a. Type II
    b. Type V
    c. Type III
    d. Type IV
13. A building constructed of heavy timber framing and masonry (usually brick) walls, sometimes referred to as mill construction is what type:
    a. Type I
    b. Type II
    c. Type III
    d. Type IV
14. A building constructed of protected steel framing and reinforced concrete, also referred to as fire resistive, is what type:
    a. Type I
    b. Type II
    c. Type V
    d. Type IV
15. Which of the following descriptions most accurately describes load bearing and non load bearing walls:
    a. Load bearing walls may support interior additions such as wall hung appliances and decorative finishes. Non load bearing walls must remain clear of all but basic interior finishes.
    b. Load bearing walls support the building itself and may be interior or exterior. Non load bearing walls are primarily dividers between rooms, halls and other interior spaces.

c. Load bearing walls always make up all four exterior walls but rarely are interior walls load bearing. Non load bearing walls are never fire rated.
d. Load bearing walls can usually be identified from outside as the walls with primary entrance and exit doors. Non load bearing walls can only be identified during building construction pre planning.