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### **How to take this course.**

1. Download and print the test questions.
2. Log in to your account with your ID and password.
3. Viewing your status page, scroll down and click on "[Click here to start this course.](#)"
4. Begin viewing the web pages. Refer to your printed test to find the correct answers. The questions track the web pages.
5. As you find the answers, circle them on your printed copy.
6. At the end of each section, you'll enter the quiz which is the same as your printed test. Refer to your circled answers when actually answering the quiz on the web.
7. Upon passing, you will proceed to the next section. If you failed to pass, you will be moved back to the beginning of that section for more review.



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### **Quiz 1**

1. Chapter 11 covers the following areas of refrigeration systems:
  - design
  - installation
  - construction
  - repair
  - all of the answers provided
2. Refrigerant storage systems are considered part of the refrigeration system when they are \_\_\_\_\_.
  - permanently installed
  - temporarily installed
  - either of the answers provided
  - neither of the answers provided
3. Factory-built equipment that has been tested and meets UL 207, 412, 471 or 1995 and is installed per manufacturer's direction is deemed to meet Chapter 11 requirements.
  - True
  - False
4. Only exposed copper tubing in a refrigeration system that is subject to physical damage shall be protected in an approved manner.
  - True
  - False
5. Water supply and discharge connections associated with refrigeration systems shall be made in accordance with this code. Installations in WA shall conform to the \_\_\_\_\_.
  - International Plumbing Code
  - National Plumbing Code
  - Universal Plumbing Code
  - 2018 Uniform Plumbing Code

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## Quiz 2

1. A refrigeration system's classification is determined in accordance with \_\_\_\_\_.
  - Section 1103.1
  - Section 1103.2
  - Section 1103.3
  - Section 1104.4
2. A refrigerant classification in accordance with \_\_\_\_\_.
  - Section 1103.1
  - Section 1103.2
  - Section 1103.3
  - Section 1104.4
3. The maximum allowable quantity of refrigerant is determined in accordance with \_\_\_\_\_, based on type of refrigerant, system classification and occupancy.
  - Section 1103.1
  - Section 1103.2
  - Section 1103.3
  - Section 1104
4. The system enclosure requirements are determined in accordance with \_\_\_\_\_.
  - Section 1103.1
  - Section 1103.2
  - Section 1103.3
  - Section 1104
5. Refrigeration equipment and appliance location and installation shall be subject to the limitations of \_\_\_\_\_.
  - Chapter 2
  - Chapter 3
  - Chapter 4
  - Chapter 11

## Quiz 3

1. Occupancy classification is determined by the locations of refrigerating systems that consider the ability of people to respond to potential exposure to refrigerants.
  - True
  - False

2. When equipment is located outside a building and is within \_\_\_\_\_ of any building opening, the equipment shall be governed by the occupancy classification of the building.
  - 10 feet
  - 20 feet
  - 30 feet
  - 50 feet
  - 100 feet
3. Institutional occupancy is that portion of premises from which, because they are disabled, debilitated or confined, occupants cannot readily leave without the assistance of others. An example would be a \_\_\_\_\_.
  - residential home
  - nursing home
  - grade school
  - high school
  - college dorm
4. A public assembly occupancy is that portion of premises where large numbers of people congregate, and from which occupants cannot quickly vacate. An example would be a/n \_\_\_\_\_.
  - auditorium
  - ballroom
  - classroom
  - passenger depot
  - all of the answers provided
5. A residential occupancy must provide occupants with \_\_\_\_\_.
  - provisions for living
  - provisions for sleeping
  - provisions for eating
  - provisions for cooking
  - all of the answers provided

## Quiz 4

1. The location of refrigeration systems exceeding allowable amounts as shown in Table 1103.1 shall be \_\_\_\_\_.
  - only outdoors
  - only in a machinery room
  - outdoors or in a machinery room
  - none of the answers provided
2. Refrigeration equipment that has less than 6.6 pounds of refrigerant does not need to be located in a machinery room.
  - True
  - False

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3. In a nursing home, the amount of refrigerant normally allowed in Table 1103.1 is reduced by \_\_\_\_\_.
  - 10 percent
  - 50 percent
  - 75 percent
  - 100 percent
4. The maximum amount of A2, B2, A3, B3 refrigerant allowed in an institutional occupancy must be less than \_\_\_\_\_ except in kitchens, laboratories and mortuaries.
  - 100 pounds
  - 250 pounds
  - 500 pounds
  - 550 pounds
  - 1,000 pounds
5. The refrigerate machinery room is separated from other occupancies by construction with tight-fitting doors.
  - True
  - False

## Quiz 5

1. Air-conditioning systems for human comfort that are used in high-probability systems, shall not use what refrigerant types?
  - B1
  - B2
  - B3
  - all of the answers provided
  - none of the answers provided
2. In nonindustrial occupancies, Group A2 and B2 refrigerants shall not be used in high-probability systems where the quantity of refrigerant in any independent refrigerant circuit exceeds the amount shown in Table 1104.3.2.
  - True
  - False
3. Group A3 and B3 refrigerants may be used in any application.
  - True
  - False
4. The total of all Group A2, B2, A3 and B3 refrigerants other than R-717, ammonia, shall not exceed \_\_\_\_\_ except where approved.
  - 500 pounds
  - 610 pounds
  - 970 pounds
  - 1,100 pounds
  - 1,357 pounds

5. If there is any device which has an open flame or a surface temperature greater than 800°F when used in a room containing more than 6.6 pounds, then a hood and exhaust system must be installed which exhausts to the outdoors.
  - True
  - False

## Quiz 6

1. Ducts and air handlers in a machinery room that operate at a lower pressure than the room, shall be sealed to prevent any refrigerant leakage from entering the airstream.
  - True
  - False
2. Refrigerant detectors are required in machinery rooms.
  - True
  - False
3. The frequency of periodic tests of the mechanical ventilating system is \_\_\_\_\_.
  - monthly
  - semi-annually
  - annually
  - performed with the manufacturer's specifications and as required by the AHJ
4. Generally, a gas fired water heater may be installed and operate in a machinery room.
  - True
  - False
5. A gas fired water heater may be installed and operate in a machinery room if \_\_\_\_\_.
  - the refrigerant is carbon dioxide or water
  - the combustion air is ducted from outside the machinery room and sealed in order to prevent any refrigerant leakage from entering the combustion chamber
  - a refrigerant vapor detector is employed to automatically shut off the combustion process in the event of refrigerant leakage
  - all of the answers provided
  - none of the answers provided

## Quiz 7

1. In a machinery room, there shall not be an open flame-producing device or continuously operating hot surface over 800°F permanently installed in the room.
  - True
  - False

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2. If exceptions to the code are not considered, in an ammonia machinery room, the ventilation system shall be operated continuously at the ventilation rate.

- True
- False

3. An exception(s) to a continuously running ammonia room ventilation fan would be \_\_\_\_\_.

- if the ammonia machinery room is equipped with a vapor detector that would automatically start the ventilation system at the emergency rate, and that will also actuate an alarm at a detection level not to exceed 1,000 ppm
- if the ammonia machinery room conforms to the Class 1, Division 2, hazardous location classification requirements of NFPA 70
- either of the answers provided
- neither of the answers provided

4. If a flammable refrigerant, Group A2, A3, B2, and B3 is used, the machinery room shall conform to the Class 1, Division 2, hazardous location classification requirements of the NFPA 70.

- True – always the case
- False – flammable refrigerants must never be used
- True – with the exception of ammonia machinery rooms

5. Remote control of the mechanical equipment and appliances located in the machinery room shall comply with \_\_\_\_\_.

- A. Section 1106.5.1
- B. Section 1106.5.2
- C. Section 1106.5.3
- D. Section 1106.5.4
- E. Only A and B

## Quiz 8

1. Rigid or flexible metal enclosures or pipe ducts shall be provided for soft, annealed copper tubing, and used for refrigerant piping erected on the premises and containing other than Group A1 or B1 refrigerants.

- True
- False

2. Enclosures shall not be required for connections between condensing units and the nearest riser box(s), provided such connections do not exceed \_\_\_\_\_ in length.

- 3 feet
- 6 feet
- 10 feet
- 12 feet

3. Refrigeration piping that may sweat from the surrounding air, and which may cause safety hazards or structural problems will need to be protected in an approved manner.

- True
- False

4. Carbon steel pipe of at least Schedule \_\_\_\_\_ shall be used for Group A2, A3, B2 or B3 refrigerant liquid lines for sizes 1.5 inches and smaller.

- 40
- 60
- 80
- 120

5. Carbon steel pipe of at least Schedule \_\_\_\_\_ shall be used for Group A1 or B1 refrigerant liquid lines 6 inches and smaller.

- 40
- 60
- 80
- 120

## Quiz 9

1. Copper tubing joints used in refrigerating systems containing Group A2, A3, B2 or B3 refrigerants shall be soldered.

- True
- False

2. Type 3003-0 aluminum tubing with high-pressure fittings shall not be used with \_\_\_\_\_.

- methyl chloride
- R-22
- R-410A
- all of the answers provided
- none of the answers provided

3. Joints and all refrigerant-containing parts of a refrigerating system located in an air duct of an air-conditioning system, shall be leak proof at a pressure of \_\_\_\_\_ of the higher of the design pressure or pressure relief device setting.

- 110%
- 150%
- 175%
- 200%

4. Refrigerant pipe joints erected on the premises shall be exposed for visual inspection prior to being covered or enclosed.

- True
- False

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5. All systems containing more than 6.6 pounds of a refrigerant that use positive-displacement compressors shall have stop valves installed \_\_\_\_\_.
- at the inlet of each compressor, compressor unit or condensing unit
  - at the discharge outlet of each compressor, compressor unit or condensing unit and of each liquid receiver
  - either of the answers provided
  - neither of the answers provided

## Quiz 10

1. Every refrigerant-containing part of every system that is erected on the premises, except compressors, condensers, vessels, evaporators, safety devices, pressure gauges and control mechanisms that are listed and factory tested, shall be tested and proved tight after complete installation.
- True
  - False
2. Pressure testing shall include both the high and low-pressure sides of each system at not more than the design pressure or the setting of the pressure relief device(s).
- True
  - False
3. The design pressures for testing shall be those listed on the condensing unit, compressor or compressor unit nameplate, as required by ASHRAE 15.
- True
  - False
4. A pressure testing exception is acceptable for gas bulk storage tanks that are not permanently connected to a refrigeration system.
- True
  - False
5. A pressure testing exception would be a field erected limited-charge system equipped with a pressure relief device. It must be pressure tested at least \_\_\_\_\_ times the pressure setting of the relief device.
- 1.5
  - 2.0
  - 2.5
  - 3.0