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EPA 608

Universal Practice Test

Test 5

100 Questions • 25 per section

Universal: Core, Type I, Type II and Type III • Original practice questions

Written for the revised Section 608 question bank (from January 1, 2027) • Content current as of October 2026

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How to Use This Material

This test has 100 questions in the four sections of the Universal exam: Core, Type I, Type II and Type III, 25 questions each. Answer each question on your own first, choosing the single BEST answer. Each section is scored separately, and you need 18 of 25 (70%) to pass a section. Your certifying organization sets the time limit on exam day, so practice at a steady pace: about 30 minutes per section, or 2 hours for all 100 questions. Then check your work against the separate answer key, fill in the score sheet at the end of the key, and read every explanation, including for the questions you got right, because the reasoning is what transfers to new questions on exam day.

EPA 608 Universal Practice Test 5

100 questions • 4 sections of 25 • Answer key and explanations in the separate Answer Key file
Choose the single BEST answer for each question. Passing is 18 of 25 (70%) in each section. Suggested practice pace: about 30 minutes per section.

Section 1: Core Questions 1-25

1. On a running system, the condenser rejects more heat than the evaporator absorbs. What accounts for the extra heat?

- **A.** Heat absorbed from the filter-drier and receiver
- **B.** Heat added to the vapor by the compressor
- **C.** Heat picked up across the metering device
- **D.** Heat released by subcooling in the evaporator

2. Why must a hermetic compressor never be energized while the system is under deep vacuum?

- **A.** The filter-drier will release its moisture
- **B.** The vacuum pump will reverse direction
- **C.** The motor windings can be damaged
- **D.** The oil will be pulled into the condenser

3. Before inflation adjustments, what civil penalty does the Clean Air Act statute set for Section 608 violations?

- **A.** $25,000 per pound vented
- **B.** $10,000 per day for each violation
- **C.** $25,000 per day for each violation
- **D.** $27,500 per day for each violation

4. How should refrigerant cylinders be carried in a service truck?

- **A.** Loose in the bed so they can be unloaded quickly
- **B.** On their sides so liquid stays away from the valve
- **C.** Inverted so liquid is ready at the valve
- **D.** Upright and secured so they cannot tip or roll

5. A technician holds only Type I certification. A customer asks her to recover the 4 lb charge from an R-32 ductless mini-split. May she?

- **A.** Yes; A2L systems under 5 lb are Type I work
- **B.** No; a split system needs Type II despite its small charge
- **C.** No; R-32 systems require Type III
- **D.** Yes; any appliance with 5 lb or less of charge is Type I work

6. Which of these is NOT an exempt substitute?

- **A.** Nitrogen
- **B.** Carbon dioxide
- **C.** Water
- **D.** R-32

7. Why does a PT chart list two pressures at each temperature for R-454B?

- **A.** Its pressure differs between psig and psia readings
- **B.** It is an azeotrope with one liquid and one vapor value
- **C.** It is a zeotrope with separate bubble and dew points
- **D.** It is a single compound with two stable phases

8. Where are refrigerant leaks most often found?

- **A.** Joints, valve cores and tubing that vibrates
- **B.** Straight runs of tubing well away from any joint or fitting
- **C.** The middle of the receiver shell
- **D.** Insulated suction lines in the middle of long straight runs

9. An owner retires an R-22 chiller with a 300 lb full charge in 2026. How long must the full-charge records be kept?

- **A.** 3 years from the date the charge was calculated
- **B.** Until 3 years after the appliance is retired
- **C.** Indefinitely, with EPA
- **D.** Until the appliance is retired

10. A recovery cylinder of R-22 has sat at a stable 70°F overnight and reads 150 psig. What is the most likely cause?

- **A.** The cylinder is filled above 80% by weight
- **B.** The R-22 has fractionated inside the cylinder
- **C.** The cylinder holds too little liquid
- **D.** Non-condensables (air) in the cylinder

11. A refrigerant has an occupational exposure limit of 300 ppm and shows no flame propagation. What is its ASHRAE 34 safety group?

- **A.** B1
- **B.** B2L
- **C.** A2L
- **D.** A1

12. A recovery machine was manufactured in 2008. Which test standard was it certified to?

- **A.** UL 1963 Supplement SB
- **B.** ARI 740-1995
- **C.** ARI 740-1993
- **D.** AHRI 740-2016

13. An R-454B air handler's refrigerant sensor keeps alarming, and the customer asks the technician to unplug it. What is correct?

- **A.** Unplug it if the system pressure looks normal on the gauges
- **B.** Never defeat it; find the leak and use only the maker's replacement
- **C.** Bypass it until the next scheduled maintenance visit, then replace it
- **D.** Recalibrate it in the field to a less sensitive set point

14. A technician argues that because R-410A traps heat, a release of R-410A thins the ozone layer. What is wrong with the argument?

- **A.** R-410A has no chlorine; its harm is to climate, not ozone
- **B.** R-410A thins the ozone layer only when it burns
- **C.** R-410A has chlorine, but it never reaches the stratosphere
- **D.** Heat-trapping gases add ozone to the layer instead

15. A system reaches its Table 1 level, but a few minutes after recovery stops the pressure creeps back up. Which property of the oil explains this?

- **A.** The oil is releasing moisture as water vapor
- **B.** The oil is expanding as it cools down after recovery stops
- **C.** Refrigerant dissolved in the oil is boiling back out
- **D.** The oil is forming acids that raise the system pressure

16. An uncertified buyer with no employer certification asks for each item below. Which purchase is prohibited?

- **A.** A cylinder of carbon dioxide
- **B.** A precharged window air conditioner
- **C.** A 25 lb cylinder of R-32
- **D.** A 2 lb R-134a MVAC can with a self-sealing valve

17. About how long does it take for released CFCs to be carried up into the stratosphere?

- **A.** Two to five months
- **B.** Two to five years
- **C.** Fifty to one hundred years
- **D.** Two to five days

18. Which of these substitutes is exempt from the venting prohibition only in certain end-uses, rather than in any application?

- **A.** Nitrogen
- **B.** Water (R-718)
- **C.** Ammonia (R-717)
- **D.** Carbon dioxide (R-744)

19. Global warming potential (GWP) compares a gas with which reference, and over what usual time frame?

- **A.** R-12, over 20 years
- **B.** Carbon dioxide, over 100 years
- **C.** Carbon dioxide, over 10 years
- **D.** R-11, over 100 years

20. Why is a micron gauge, rather than the manifold compound gauge, used to confirm a 500-micron evacuation?

- **A.** The compound gauge cannot resolve the last fraction of an inch of vacuum
- **B.** EPA requires a micron gauge for every Table 1 recovery level
- **C.** The micron gauge reads psig more accurately than the compound gauge
- **D.** The compound gauge reads only positive pressure and cannot show any vacuum

21. Under the Clean Air Act, what decides the phaseout schedule for an ozone-depleting substance?

- **A.** Its ASHRAE 34 safety group
- **B.** Its global warming potential
- **C.** Its EPA pressure category
- **D.** Whether it is a Class I or Class II substance

22. How is superheat calculated?

- **A.** Discharge-line temperature minus condensing temperature
- **B.** Suction-line temperature minus evaporator saturation temperature
- **C.** Evaporator saturation temperature minus suction-line temperature
- **D.** Condenser saturation temperature minus liquid-line temperature

23. An R-22 rooftop unit has a 40 lb full charge and leaks steadily. Does the Section 608 leak-repair rule apply?

- **A.** Yes; at the 10% comfort-cooling rate
- **B.** No; only chillers are covered
- **C.** No; the charge is under 50 lb
- **D.** Yes; R-22 is an HCFC

24. Which R-number is used for ammonia?

- **A.** R-718
- **B.** R-170
- **C.** R-717
- **D.** R-744

25. A recovery cylinder gauge reads 85 psig at sea level. What is the absolute pressure?

- **A.** 99.7 psia
- **B.** 114.7 psia
- **C.** 85.0 psia
- **D.** 70.3 psia

Section 2: Type I: Small Appliances Questions 26-50

26. Why can a single high-side fitting fail to recover enough from a small appliance with a dead compressor?

- **A.** Nothing pushes the refrigerant from the low side to the high side
- **B.** The high side holds only vapor when the unit is off
- **C.** The high-side fitting bypasses the recovery container
- **D.** The capillary tube closes off the high side when the compressor stops

27. How should the compressor be heated during passive recovery from a small appliance?

- **A.** By energizing the compressor motor in short bursts
- **B.** With a torch flame kept moving on the shell
- **C.** By plugging in the unit so a crankcase heater warms it
- **D.** With a heat blanket or heat lamp on the shell

28. Which appliances are covered by the Section 608 leak-repair rule today?

- **A.** Appliances with 5 lb or more of any non-exempt refrigerant
- **B.** Appliances with 15 lb or more of an HFC with GWP over 53
- **C.** Appliances with 50 lb or more of a CFC or HCFC refrigerant
- **D.** Appliances with 50 lb or more of any HFC or HFO refrigerant

29. Which container should receive R-32 recovered from a window air conditioner?

- **A.** A recovery cylinder that already holds some R-410A
- **B.** An evacuated gray and yellow cylinder that last held R-22
- **C.** A DOT-39 disposable cylinder that once held virgin R-32
- **D.** An evacuated A2L recovery cylinder with a red band or top

30. A small appliance loses 200% of its charge in one calendar year. Must the owner report it to EPA as a chronic leaker?

- **A.** Yes, by March 1 of the following year
- **B.** Yes; any appliance that loses over 125% in a year must be reported
- **C.** No; that report covers only ODS appliances of 50 lb or more
- **D.** Only if the refrigerant is a CFC or HCFC

31. A convenience store has six display cases served by one remote condensing unit. Each case holds about 3 lb of refrigerant. How are the cases classified?

- **A.** Small appliances, because each case has its own evaporator
- **B.** Type III appliances, because the system is a large one
- **C.** Small appliances, because each individual case holds under 5 lb of refrigerant
- **D.** Not small appliances; the field-piped system is Type II equipment

32. A recovery device made in 1992 is used on a freezer whose compressor is seized. What is required?

- **A.** Reach 0 psig, since the equipment predates certification
- **B.** Recover 90% of the charge or reach 4 in. Hg vacuum
- **C.** Recover 70% of the charge or reach 4 in. Hg vacuum
- **D.** Recover 80% of the charge or reach 4 in. Hg vacuum

33. What chemical is R-290?

- **A.** Propane
- **B.** Isobutane
- **C.** Difluoromethane
- **D.** Ethane

34. A recovery cylinder has sat at a steady 70°F. Its pressure is well above the PT chart value for its refrigerant at 70°F. What is likely present?

- **A.** A blocked liquid dip tube
- **B.** Oil carried over from the appliance
- **C.** Air or other non-condensables
- **D.** Too little refrigerant in the cylinder

35. During a repair, why should an R-134a refrigerator's circuit not be left open to the air longer than necessary?

- **A.** Its refrigerant oil evaporates out of the compressor
- **B.** Its POE oil absorbs moisture from the air
- **C.** Its mineral oil oxidizes into acid sludge
- **D.** Its PAG oil becomes flammable in open air

36. In a running refrigerator, where does air collect, and what symptom does it cause?

- **A.** In the evaporator, causing suction pressure below the PT value
- **B.** In the condenser, causing head pressure above the PT value
- **C.** In the compressor oil, causing foaming at every start-up
- **D.** In the capillary tube, causing frost on the suction line

37. Which product is a small appliance?

- **A.** A factory-sealed 3 lb dehumidifier
- **B.** A 4 lb tractor cab air conditioner
- **C.** A factory-sealed 8 lb ice machine
- **D.** A 3 lb ductless mini-split heat pump

38. A coworker says a small appliance must be pulled down to 500 microns before it is opened for repair. What is correct?

- **A.** The rule is 500 microns for any appliance with a working compressor
- **B.** The rule is a percentage or 4 in. Hg; 500 microns is for dehydration
- **C.** The rule is 500 microns or 4 in. Hg, whichever comes first
- **D.** The rule is 500 microns when the recovery equipment was made after Nov 15, 1993

39. Since what date has the safe disposal rule applied to appliances containing non-exempt substitutes such as R-134a?

- **A.** Jan 1, 2018
- **B.** Apr 10, 2020
- **C.** Jan 1, 2017
- **D.** Nov 15, 1995

40. Why does heating a non-running compressor speed passive recovery?

- **A.** Heat lowers the boiling point of the oil so the oil itself evaporates
- **B.** Heat lets the compressor restart and pump the refrigerant
- **C.** Heat expands the capillary tube so it stops restricting
- **D.** Warm oil holds less refrigerant, and higher pressure pushes it out

41. Which of these small-appliance service actions violates the venting prohibition?

- **A.** Releasing nitrogen after a pressure test on a freezer
- **B.** Disconnecting low-loss hoses after a completed recovery
- **C.** Cutting the process stub on a charged R-134a refrigerator
- **D.** Releasing R-600a from a household refrigerator

42. On a small appliance, a piercing access valve is usually installed on which tubing?

- **A.** The capillary tube
- **B.** The evaporator coil
- **C.** The condenser coil
- **D.** The process stub

43. Which recovery equipment must be certified by an EPA-approved testing organization?

- **A.** Both types, if made or imported on or after Nov 15, 1993
- **B.** Only system-dependent equipment used on small appliances
- **C.** Only equipment certified for flammable refrigerants
- **D.** Only self-contained equipment made after Nov 15, 1993

44. A technician earned Type I certification in 2005. The revised question bank takes over after Jan 1, 2027. Must the technician retest?

- **A.** Yes, to work on A3 refrigerators
- **B.** Yes, every 5 years after issuance
- **C.** Yes; old-bank cards expire in 2027
- **D.** No; certification does not expire

45. A passive recovery into an evacuated bag from a running refrigerator stalls at 85% of the charge. The equipment was made in 2018. What should the technician do?

- **A.** Vent the remainder, since passive recovery has stalled and cannot continue
- **B.** Stop; 85% exceeds the 80% that bags require
- **C.** Keep going, such as with a pump into the bag, to 90% or 4 in. Hg
- **D.** Stop; a bag cannot reach any higher level

46. On one service call, a technician does four jobs on a vending machine. Which job requires Section 608 certification?

- **A.** Tightening the compressor mounting bolts
- **B.** Repainting the cabinet
- **C.** Replacing insulation on the suction line
- **D.** Attaching gauge hoses to a piercing valve

47. A technician recovering from a working refrigerator with a 2016 machine sees the compound gauge reach and hold 4 in. Hg vacuum. The amount recovered was not weighed. Has the rule been met?

- **A.** Yes; 4 in. Hg vacuum satisfies the rule regardless of percentage
- **B.** No; the recovered amount must always be weighed on a scale to prove 90%
- **C.** Yes, but only because the compressor was running
- **D.** No; a running compressor requires 10 in. Hg vacuum

48. A technician holds only Type I certification. Which job is within that certification?

- **A.** Recovering refrigerant from a factory-sealed 4 lb vending machine
- **B.** Recovering refrigerant from a 10 lb factory-built packaged rooftop unit
- **C.** Recovering refrigerant from an R-123 chiller
- **D.** Recovering refrigerant from a 2 lb ductless mini-split

49. A recovery device made in 1990 has no certification label. A technician uses it on a refrigerator whose compressor runs. Which statement is correct?

- **A.** It may not be used, since it has no certification label
- **B.** It may be used and must reach 80% or 4 in. Hg
- **C.** It may be used and must reach 90% or 4 in. Hg
- **D.** It may be used only if the compressor does not run

50. A locked-rotor compressor in a window unit will not turn. The technician's certified recovery machine was made in 2009. What recovery level applies?

- **A.** 70% of the charge or 0 psig
- **B.** 90% of the charge or 10 in. Hg vacuum
- **C.** 80% of the charge or 4 in. Hg vacuum
- **D.** 90% of the charge or 4 in. Hg vacuum

Section 3: Type II: High- and Medium-Pressure Appliances Questions 51-75

51. A technician evacuates a new, empty recovery cylinder before connecting it to the recovery machine. Which problem does this prevent?

- **A.** Oil foaming inside the cylinder during transfer
- **B.** Overfilling the cylinder past 80% by weight
- **C.** Air mixing with the recovered refrigerant
- **D.** Fractionation of a blend inside the cylinder

52. An R-404A low-temperature system shows 32.6 psig suction, which is the 0°F dew point. The suction line is 12°F. What is the superheat?

- **A.** 12°F
- **B.** 0°F
- **C.** 44.6°F
- **D.** 20.6°F

53. A recovery machine made in 2022 is certified for flammable refrigerants such as R-32 and R-454B. Which test standard applies?

- **A.** AHRI 740-2016 plus UL 1963 Supplement SB
- **B.** AHRI 740-2016 only
- **C.** ARI 740-1995 plus UL 1963 Supplement SB
- **D.** AHRI 700-2016 plus UL 1963 Supplement SB

54. A recovery machine with a hermetic compressor is left running long after the system reaches a deep vacuum. What is the risk?

- **A.** The low-loss fittings can open
- **B.** The compressor can overheat from low refrigerant flow
- **C.** The system can be pulled below the lowest pressure Table 1 allows
- **D.** The cylinder can fill with oil

55. Which job requires the deepest recovery vacuum before opening? (All recovery machines were made after 2010.)

- **A.** Replacing the evaporator of a 150 lb R-134a unit
- **B.** Replacing the evaporator of a 300 lb R-134a chiller
- **C.** Replacing the compressor of a 150 lb R-410A rooftop unit
- **D.** Replacing the condenser of a 300 lb R-22 system

56. Which type of technician certification covers very high-pressure appliances such as R-23 ultra-low-temperature systems (other than small appliances)?

- **A.** Universal only
- **B.** Type III
- **C.** Type I
- **D.** Type II

57. A 600 lb R-22 supermarket rack receives 12 lb of refrigerant 35 days after the previous addition. Using the annualizing method, what is the result?

- **A.** About 20.9%, over the 20% threshold, so repair is required
- **B.** About 20.9%, under the 35% threshold, so no repair is required
- **C.** About 20.9%, under the 30% threshold, so no repair is required
- **D.** About 2.0%, under the 20% threshold, so no repair is required

58. After recovery, a technician stops the machine and waits a few minutes before opening the system. What is the purpose of the wait?

- **A.** To let air leak back in to 0 psig
- **B.** To check that the pressure does not rise
- **C.** To let the compressor oil cool down before draining it
- **D.** To let the machine's compressor reset

59. A system is pressurized with nitrogen at 2 p.m. in full sun. At 6 a.m. the next morning, in much colder air, the gauge reads lower. What should the technician conclude?

- **A.** Nitrogen passes through copper walls in cold weather
- **B.** The system definitely leaks and must be opened again
- **C.** The regulator is still feeding nitrogen into the system
- **D.** Compare readings at equal temperatures first

60. Under §82.157, when is a leak presumed to have been repaired?

- **A.** When the follow-up test is done within 30 days of repair
- **B.** When no refrigerant is added for 6 months after the repair
- **C.** When no refrigerant is added for 30 days after the repair
- **D.** When no refrigerant is added for 12 months after the repair

61. At 40°F, R-22 saturates at about 68.6 psig and R-410A at about 118.8 psig. About how many times higher is R-410A's pressure?

- **A.** About 1.4 times
- **B.** About 1.7 times
- **C.** About 1.2 times
- **D.** About 2.5 times

62. On a windy roof, an electronic detector gives no alarm even though a rooftop unit has clearly lost charge. What should the technician do?

- **A.** Shield the area from the wind and retest slowly
- **B.** Assume the leak must be inside the building
- **C.** Pressurize the unit with compressed air to force gas out
- **D.** Turn up the sensitivity and sweep the unit quickly

63. Which technique is correct when using an electronic leak detector?

- **A.** Hold the probe above each joint, since refrigerant rises
- **B.** Run a fan across the joints to spread the gas to the probe
- **C.** Move the probe slowly along each joint, including below it
- **D.** Sweep quickly over the whole unit, then go back to alarms

64. After a compressor burnout on a Type II system, what should be checked before the new compressor goes in?

- **A.** An oil sample tested for acid
- **B.** The superheat setting at the TXV
- **C.** The cylinder's fill percentage
- **D.** The voltage at the thermostat

65. What gauges and hoses are suitable for servicing an R-32 system?

- **A.** Any gauges, since pressure has no effect on tool ratings
- **B.** Ones rated for R-410A pressures, as R-32 runs about 2% higher
- **C.** Standard R-22 gauges, since R-32 runs at lower pressure
- **D.** Low-pressure gauges, since R-32 is a medium-pressure gas

66. A technician searches an R-410A system sitting at 0 psig with an electronic detector and finds nothing. What is the most likely reason?

- **A.** Nothing is pushing gas out through the leak at 0 psig
- **B.** The detector must be set to read in microns at 0 psig
- **C.** Refrigerant at 0 psig is lighter than air and rises away
- **D.** Electronic detectors work only on systems in a vacuum

67. What is the recommended method of dehydrating a Type II system?

- **A.** Running it with extra filter-driers
- **B.** Blowing it out with compressed air
- **C.** Evacuation with a vacuum pump
- **D.** Purging it with refrigerant vapor

68. Under the opening test, a repair is major when it uncovers an opening of more than how much flow area for more than how long?

- **A.** 8 square inches for 10 minutes
- **B.** 4 square inches for 15 minutes
- **C.** 2 square inches for 15 minutes
- **D.** 4 square inches for 30 minutes

69. Where does a technician find the date needed to choose the Table 1 column?

- **A.** On the recovery machine's certification label
- **B.** On the technician's wallet card
- **C.** On the label of the refrigerant cylinder being used
- **D.** On the appliance's nameplate

70. R-410A runs about 1.6 to 1.7 times the pressure of R-22 at the same temperature. For Table 1 purposes, how do their pressure classes compare?

- **A.** Both are high-pressure refrigerants
- **B.** Both are very high-pressure refrigerants
- **C.** R-410A is high-pressure; R-22 is medium
- **D.** R-410A is very high-pressure; R-22 is high

71. An ice rink's refrigeration plant holds 900 lb of R-22. Which leak-rate threshold applies to it?

- **A.** 20%
- **B.** 30%
- **C.** 10%
- **D.** 35%

72. An R-23 ultra-low-temperature system needs a non-major valve repair and will not be evacuated afterward. What is required before opening?

- **A.** Evacuate to no higher than 5 psig
- **B.** Evacuate to no higher than 0 psig
- **C.** Pressurize with nitrogen to 0 psig
- **D.** Evacuate to 10 in. Hg vacuum

73. A recovery cylinder has been sitting in direct sun next to a rooftop unit, and recovery is slow. Why?

- **A.** Sunlight breaks down the refrigerant in the cylinder
- **B.** The warm cylinder raises the appliance pressure too much to allow flow
- **C.** A warm cylinder makes the recovery machine run in reverse
- **D.** The warm cylinder's higher pressure reduces the pressure difference

74. Which job on an R-404A walk-in requires no refrigerant recovery?

- **A.** Replacing a leaking flare fitting on the liquid line
- **B.** Replacing the external solenoid coil
- **C.** Replacing the filter-drier
- **D.** Replacing the evaporator coil

75. Does the requirement to use certified recovery equipment apply when removing R-410A from a rooftop unit?

- **A.** No; it covers only appliances holding 50 lb or more
- **B.** No; it covers only CFC and HCFC refrigerants
- **C.** Yes; but only for units built after 2017
- **D.** Yes; it covers non-exempt substitutes such as HFCs

Section 4: Type III: Low-Pressure Appliances Questions 76-100

76. To protect it from damage, a contractor mounts the R-123 sensor near the machinery room ceiling above the chiller. What is wrong with this?

- **A.** The sensor must be mounted outside the machinery room
- **B.** R-123 vapor is heavier than air, so sensors go low
- **C.** The sensor must be mounted on the purge unit vent
- **D.** Nothing; leaked vapor rises to the ceiling and spreads

77. Why would using nitrogen to bring an R-123 chiller up to 0 psig for a non-major repair lead to extra refrigerant loss later?

- **A.** Nitrogen raises the pressure past the rupture disc rating as soon as it warms up
- **B.** Nitrogen reacts with R-123 to form acids that eat through the evaporator tubes
- **C.** Nitrogen dissolves into the oil and later forces refrigerant out of the shaft seal
- **D.** It becomes a non-condensable the purge must vent, taking refrigerant along

78. An R-11 evaporator gauge reads 21.1 in. Hg vacuum. About what is the evaporating temperature?

- **A.** About 20°F
- **B.** About 32°F
- **C.** About 0°F
- **D.** About 40°F

79. At atmospheric pressure (0 psig), R-11 boils at about:

- **A.** 84.2°F
- **B.** 82.1°F
- **C.** 64.6°F
- **D.** 74.8°F

80. Heat is not feasible, so a technician uses nitrogen at 8 psig to leak test an R-123 chiller. Another technician says nitrogen may never be put in an R-123 chiller. Who is right?

- **A.** The second; nitrogen is banned from R-123 chillers for every purpose
- **B.** Neither; nitrogen is allowed only in R-113 chillers
- **C.** The first; nitrogen is a leak-test fallback, kept at 10 psig or less
- **D.** Neither; nitrogen is allowed, but only up to 15 psig

81. Which chiller component removes the air and moisture that leak into a low-pressure system?

- **A.** The recovery unit
- **B.** The rupture disc
- **C.** The purge unit
- **D.** The filter-drier on the charging line

82. An electronic detector alarms near a flange on a pressurized chiller. What is the usual next step?

- **A.** Add refrigerant and recheck in a week
- **B.** Isolate the purge unit and retest
- **C.** Raise the pressure to 15 psig to confirm it
- **D.** Pinpoint the leak with soap bubbles

83. After switching to liquid, how is the final amount of refrigerant charged into a chiller controlled?

- **A.** By charging until the shell reaches 0 psig
- **B.** By charging until the purge unit stops
- **C.** By weighing it in to the nameplate charge
- **D.** By charging until the condenser hits 10 psig

84. A temperature sensor well on an R-123 chiller will be replaced, leaving a 1 sq in opening for 10 minutes, with no evacuation to atmosphere afterward. How is the chiller prepared?

- **A.** Raise it to 0 psig or less using heat, then open
- **B.** Evacuate it to 25 mm Hg absolute before opening
- **C.** Raise it to 0 psig using nitrogen, then open it right away
- **D.** Raise it to 5 psig using heat, then open

85. An R-123 chiller sits idle all summer in a hot machinery room. Why might a leak during that time go unnoticed by the purge unit?

- **A.** The rupture disc relieves the extra pressure before any leak can develop in the shell
- **B.** The shell is above atmospheric, so the leak pushes refrigerant out
- **C.** The purge unit runs constantly on an idle chiller and masks any change in its run time
- **D.** Leaks seal themselves when the shell warms, so no refrigerant or air moves through them

86. Which reading on an R-123 chiller meets the low-pressure Table 1 requirement?

- **A.** 15 in. Hg vacuum
- **B.** 25 in. Hg vacuum
- **C.** 20 mm Hg absolute
- **D.** 30 mm Hg absolute

87. A technician will add refrigerant to an R-123 chiller. Which connection is used?

- **A.** The evaporator charging valve
- **B.** The condenser water box drain
- **C.** The compressor discharge valve
- **D.** The purge unit vent connection

88. An R-123 chiller holds 150 lb of refrigerant. Which recovery level applies before a major repair?

- **A.** 10 in. Hg vacuum, since it holds under 200 lb
- **B.** 4 in. Hg vacuum, since it holds under 200 lb
- **C.** 0 in. Hg, since it holds under 200 lb
- **D.** 25 mm Hg absolute, the same as any size

89. A recovery vessel holding R-123 is left in a closed truck and warms to 120°F. Why is that a concern for a vessel with a 15 psig rupture disc?

- **A.** R-123 decomposes into phosgene once it reaches 120°F in a vessel
- **B.** R-123 is only about 6 psig at 120°F, so there is no real concern
- **C.** R-123 is still in a vacuum at 120°F, so the vessel may collapse
- **D.** R-123 is at about 15 psig at 120°F, right at the disc's rating

90. An owner retiring a leaking R-11 chiller will replace it with equipment that uses an exempt substitute. How long may the retirement take?

- **A.** Up to 18 months
- **B.** Up to 120 days
- **C.** Up to 30 days
- **D.** Up to 13 months

91. Which protective equipment is appropriate for routine refrigerant work on an R-123 chiller?

- **A.** A dust mask and hearing protection
- **B.** None, since R-123 runs in a vacuum
- **C.** An air-purifying respirator only
- **D.** Safety glasses and protective gloves

92. An R-11 condenser with no non-condensables reads 8.8 psig. About what is the condensing temperature?

- **A.** About 85°F
- **B.** About 120°F
- **C.** About 100°F
- **D.** About 75°F

93. What does air that leaks into a running chiller do once it reaches the condenser?

- **A.** Condenses along with the refrigerant and causes no harm at all
- **B.** Raises head pressure above the PT value, wasting energy
- **C.** Sinks to the evaporator and dissolves in the oil
- **D.** Lowers head pressure and improves heat rejection

94. EPA's low-pressure line is 45 psia at 104°F. About what gauge pressure is that at sea level?

- **A.** About 60 psig
- **B.** About 45 psig
- **C.** About 3 psig
- **D.** About 30 psig

95. Under ASHRAE 15, what does a machinery-room refrigerant detector activate when it senses refrigerant at its set point?

- **A.** The evaporator rupture disc
- **B.** An alarm and mechanical ventilation
- **C.** Only a light inside the room
- **D.** The chiller's purge unit

96. Which standard sets the machinery-room refrigerant detector and alarm requirements discussed on the exam?

- **A.** AHRI 740
- **B.** ASHRAE 34
- **C.** ASHRAE 15
- **D.** AHRI 700

97. Heavy purging shows an R-123 chiller has a leak. Hot water and heater blankets are not available, so the technician uses nitrogen for the leak test. Which setup is acceptable practice?

- **A.** A regulator and relief valve, keeping pressure at 10 psig or less
- **B.** A regulator only, with the pressure brought up to about 15 psig max
- **C.** Shop compressed air at 10 psig in place of nitrogen
- **D.** No regulator, with pressure watched on the gauge to 10 psig

98. A 900 lb R-123 comfort chiller needs a compressor replacement, using a recovery unit made in 2018. Which plan meets the rules and good practice?

- **A.** Recover vapor to 0 psig, then open it as a non-major repair
- **B.** Push the liquid out with nitrogen, then pull vapor to 25 mm Hg absolute
- **C.** Water flowing; liquid, then vapor to 25 mm Hg absolute; verify; open
- **D.** Recover to 15 in. Hg vacuum, since the charge exceeds 200 lb

99. Once the chiller's pressure is above the 32°F saturation point, why switch from vapor to liquid?

- **A.** Vapor alone cannot raise the chiller's pressure any further
- **B.** Vapor charging would cause R-123 to fractionate from that point on
- **C.** Liquid charges faster, and flashing no longer threatens the tubes
- **D.** EPA rules require the last half of the charge to go in as liquid

100. An R-123 chiller needs a non-major repair. No hot water or heater blankets can be brought to the site, but a nitrogen cylinder is available. What should the technician do?

- **A.** Use dry compressed air up to 0 psig instead
- **B.** Use nitrogen up to 0 psig, since no heat source can be brought to the site
- **C.** Not use nitrogen; get a heat source or evacuate to 25 mm Hg absolute
- **D.** Use nitrogen to 10 psig, then vent down to 0 psig