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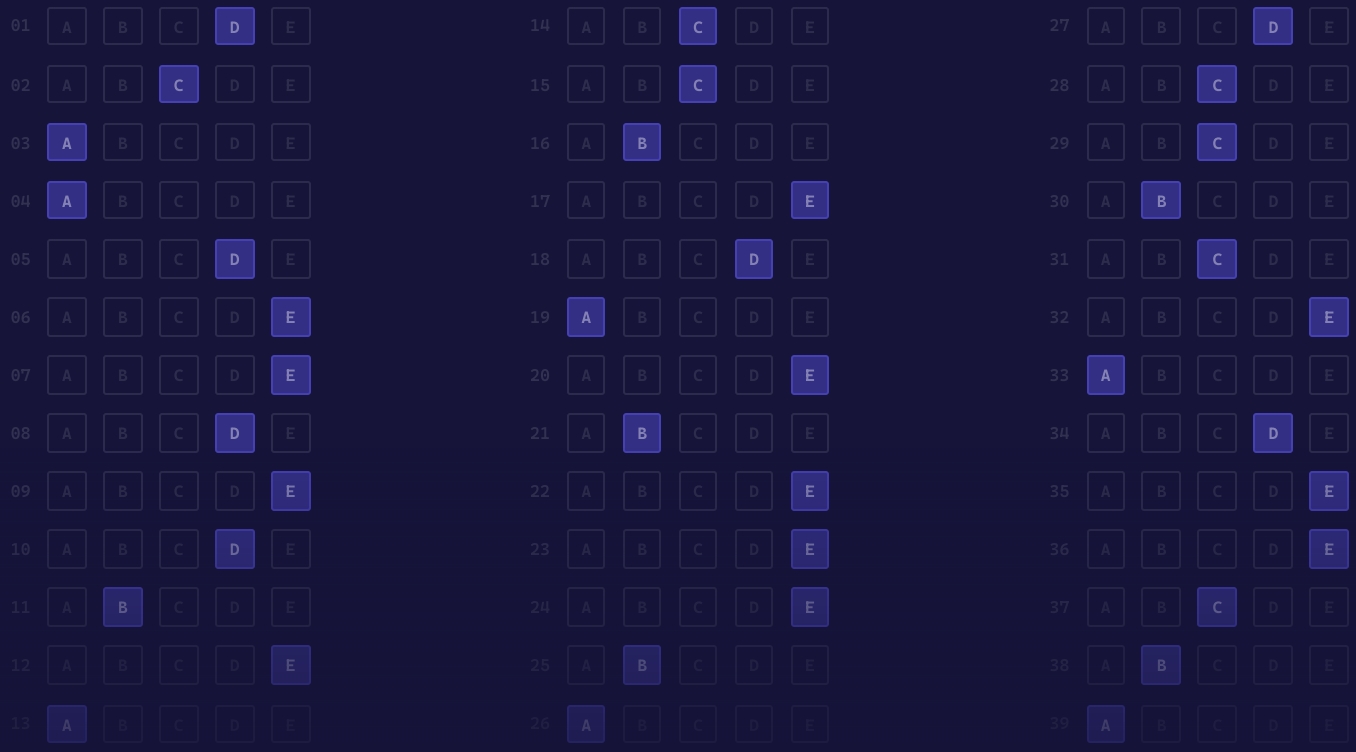

PRACTICE QUESTIONS

ARIZONA REGISTRAR OF CONTRACTORS

X65XZ38W

AZ R-39R/C-39 (CR-39) Air Conditioning and Refrigeration (Residential/Commercial)

EDITION	QUESTIONS	FORMAT
Demo	9	Limited Edition PDF

Before you begin

What this is

9 practice questions for ARIZONA REGISTRAR OF CONTRACTORS `X65XZ38W`, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, `X65XZ38W`
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

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QUESTION 1 MULTIPLE CHOICE

Which two components of a vapor-compression refrigeration system are located between the compressor discharge and the evaporator inlet? (Choose two.)

A **Condenser**

B Accumulator

C **Metering device (TXV/EEV)**

D Suction line accumulator

E Reversing valve

ANSWER **A** · **C**

WHY In a basic vapor-compression refrigeration cycle, the refrigerant leaves the compressor as a hot, high-pressure vapor and flows into the condenser (A), where it rejects heat and condenses to a high-pressure liquid. The high-pressure liquid then passes through the metering device (C), which reduces its pressure and temperature before it enters the evaporator. The accumulator (B) and suction line accumulator (D) are low-side components located on the suction line between the evaporator and compressor. A reversing valve (E) is used only in heat pump systems and is not part of the standard cooling cycle.

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QUESTION 2 MULTIPLE CHOICE

When evacuating a system before charging, which two actions are required to remove non-condensables and moisture to a level suitable for charging? (Choose two.)

A **Use a vacuum pump rated for refrigeration service**

B Open service valves and isolate the compressor from the system

C Break the vacuum with refrigerant to a positive pressure before final evacuation

D **Recover remaining refrigerant into an EPA-approved cylinder before opening the system**

E Pull the vacuum only with the compressor running as the vacuum source

ANSWER **A · D**

WHY Evacuation must be performed with a dedicated vacuum pump rated for refrigeration (A); the system's compressor is never used as a vacuum source because it is not designed for that service. Before opening or evacuating, any remaining refrigerant must be recovered into an EPA-approved recovery cylinder (D) per Section 608 regulations. Isolating the compressor (B) is not a required step for evacuation. Breaking the vacuum (C) is not a standard evacuation step on its own. Running the compressor as a vacuum source (E) can damage it and is prohibited.

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QUESTION 3 SINGLE CHOICE

On a TXV-metered system, the suction line at the evaporator outlet feels warm and the suction pressure is high relative to the load, but the compressor is running normally. Which condition best explains these symptoms?

A Low refrigerant charge

B Restricted metering device (TXV)

C Refrigerant overcharge

D Loss of condenser airflow

E Compressor mechanical failure

ANSWER C

WHY An overcharge (C) typically raises head pressure and, because the metering device still feeds refrigerant, also raises suction pressure and causes high suction superheat. With a true TXV restriction (B) or low charge (A), suction superheat would be elevated but suction pressure would be low relative to load. Loss of condenser airflow (D) primarily elevates head pressure. Compressor mechanical failure (E) would typically reduce capacity and produce abnormal sounds.

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QUESTION 4 SINGLE CHOICE

Per the IRC, an air-handling unit (air handler) installed in a confined attic must be installed so that the coil and filter can be serviced and replaced. What is the minimum required service opening/clearance dimension the IRC requires in front of the unit for service access?

A 12 inches

B 18 inches

C 24 inches

D 30 inches

E 36 inches

ANSWER D

WHY Per the International Residential Code (IRC) M1305.1, equipment requiring service access must have a working clearance of at least 30 inches (D) in front of the service side. This allows technicians to remove panels, replace filters, and service coils safely. Smaller openings are non-compliant for residential HVAC equipment installed in attics, crawlspaces, or other confined spaces.

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QUESTION 5 SINGLE CHOICE

A 240V, single-phase air handler nameplate shows a Minimum Circuit Ampacity (MCA) of 28 A and a Maximum Overcurrent Protective Device (MOCP) of 45 A. Which copper conductor size and overcurrent protection combination is appropriate for the branch circuit?

A 10 AWG copper, 30 A breaker

B 8 AWG copper, 40 A breaker

C 8 AWG copper, 50 A breaker

D 6 AWG copper, 60 A breaker

E 8 AWG copper, 45 A breaker

ANSWER B

WHY Conductor ampacity must be at least equal to the MCA (28 A). Per NEC Table 310.16, 10 AWG copper is rated 30 A and would meet MCA, but the MOCP is 45 A and a 30 A breaker would nuisance-trip under inrush of the blower motor and is not sized to MOCP. 8 AWG copper is rated 40 A, which exceeds the 28 A MCA, and the next standard size overcurrent device of 40 A falls between the MCA and the 45 A MOCP, satisfying NEC 240.4(B) for the next-standard-up rule. A 50 A breaker (C) exceeds the 45 A MOCP. 6 AWG/60 A (D) is oversized. 45 A is not a standard breaker size, so option E is not available.

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QUESTION 6 SINGLE CHOICE

A natural-draft gas furnace is being installed in an attic. Which requirement applies to the condensate drain from a condensing (high-efficiency) furnace?

A The drain may terminate in the appliance's draft hood

B The drain must terminate in a trapped drain, neutralizer, or disposal point per the manufacturer's instructions and code

C The drain may be tied directly into the soil stack without a trap

D Condensate from a condensing furnace is not produced and requires no drain

E The drain must be discharged onto the attic floor where it can evaporate

ANSWER B

WHY High-efficiency condensing furnaces produce acidic condensate that must be drained through a trap to a suitable disposal point such as a floor drain, hub drain, or condensate neutralizer per the manufacturer's instructions and the IMC/IFGC. Discharging into the draft hood (A) or onto the attic floor (E) is not permitted. A trap is required (C is incorrect). Condensing furnaces do produce condensate (D is incorrect).

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QUESTION 7 SINGLE CHOICE

An Arizona licensed C-39 (Air Conditioning and Refrigeration, including solar) contractor is asked to install a 5-ton split heat pump system at a residence. Which statement best describes the scope of work the C-39 license covers for this installation?

A The C-39 license permits only the refrigerant piping portion of the work; a separate C-21 license is required for all electrical

B The C-39 license permits the complete installation of the air conditioning and refrigeration system, including low-voltage control wiring integral to the system

C The C-39 license permits the work only when the equipment is also listed for solar application

D The C-39 license prohibits performing any ductwork, so a separate B-license is always required

E The C-39 license is limited to commercial work and may not be used for residential installations

ANSWER B

WHY The Arizona Registrar of Contractors C-39 classification covers the installation, alteration, and repair of air conditioning and refrigeration systems, which includes the equipment, refrigerant piping, and the low-voltage control wiring that is integral to the system. Solar is included as an endorsement scope (R-39R/C-39R classifications cover solar). Line-voltage electrical beyond the unit's whip is typically performed by a licensed electrician under a separate classification, but the integral low-voltage control wiring is within the C-39 scope. Options A, C, D, and E mischaracterize the scope.

QUESTION 8 SINGLE CHOICE

When replacing an existing residential split air conditioner in the Phoenix climate zone, the technician must verify the new equipment meets the federal minimum efficiency standard effective for the installation date. What federal regulation sets the current minimum SEER2 for residential central air conditioners?

A ASHRAE Standard 90.1 only

B EPA Section 608

C DOE 10 CFR Part 430 (Energy Conservation Standards) implemented under the National Appliance Energy Conservation Act (NAECA)

D ACCA Manual J

E NFPA 54 (Fuel Gas Code)

ANSWER C

WHY Minimum efficiency standards for residential central air conditioners and heat pumps are set by the U.S. Department of Energy (DOE) under 10 CFR Part 430, originally authorized by NAECA. ASHRAE 90.1 (A) applies to commercial standards and is often the basis for state commercial codes. EPA Section 608 (B) governs refrigerant leakage and recovery, not efficiency. ACCA Manual J (D) is the residential load calculation procedure. NFPA 54 (E) is the fuel gas code.

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QUESTION 9 SINGLE CHOICE

A walk-in cooler shows suction pressure slightly low, head pressure normal, evaporator outlet superheat of 25°F, and the evaporator coil is partially frosting back to the compressor. The TXV bulb is clamped to the suction line at the evaporator outlet and insulated. Which is the most likely cause?

A Low refrigerant charge

B Restricted liquid line filter drier

C TXV sensing bulb has lost its charge (failed TXV stuck open)

D TXV sensing bulb has lost its charge (failed TXV stuck closed)

E Condenser fan failure

ANSWER D

WHY High superheat (25°F is high — typical is 8–18°F depending on application) with low suction pressure and frosting back from the evaporator outlet toward the compressor indicates the evaporator is being starved of refrigerant. A TXV stuck closed (D) or a restricted filter drier (B) are both plausible. However, with a stuck-closed TXV, head pressure often rises because refrigerant backs up in the condenser; here head pressure is normal, which is more consistent with low charge (A) or a starved evaporator caused by the TXV failing closed while system charge remains (the compressor pulls down suction). Given the symptoms described (low suction, high superheat, frost pattern moving toward compressor), the most diagnostic single cause listed is a failed TXV stuck closed (D). Condenser fan failure (E) would raise head pressure.