

Refrigeration and Air Conditioning Mechanic (HVAC/R)

Red Seal practice test

Independent practice questions, not official exam questions

25 original multiple-choice questions, with answers and short explanations at the end. In Ontario this trade is code 313A. The real Red Seal exam has 125 questions in four hours with a 70% pass mark. These questions do not come from the official exam and do not predict a result.

Online version with scoring: <https://redsealreadycanada.com/refrigeration-hvac-red-seal-practice-test>

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Questions

Question 1 · Common occupational skills

What should the technician do when putting a digital multimeter into service?

- A. Identify every energy source, shut down, isolate, apply personal locks and tags, dissipate stored energy and verify zero energy using an approved test.
- B. Use a meter with the required category and rating, select the correct function and prove it on a known source before and after a zero-energy test.
- C. Isolate sensitive electronics, disconnect the winding as required, select an appropriate test voltage and discharge the equipment after the test.
- D. Match the sheet to the exact refrigerant, oil, cleaner or chemical before planning exposure controls.

Question 2 · Routine trade activities

Which method follows accepted trade practice when installing a centrifugal refrigeration compressor?

- A. Install for unobstructed airflow, proper water distribution, drainage, bleed or conductivity control, freeze protection and service access.
- B. Maintain exceptionally clean piping, correct alignment and specified oil or magnetic-bearing systems, and commission anti-surge controls.
- C. Provide specified clearances, prevent discharge-air recirculation, level and support the coil, and establish correct fan rotation and controls.
- D. Use the specified port orientation, counterflow arrangement, strainers, freeze protection and external supports so piping does not load the plates.

Question 3 · Routine trade activities

What is the defining trade function of a direct-expansion evaporator coil?

- A. It keeps heat-transfer surfaces supplied with liquid refrigerant while vapour is separated and returned to the compressor.
- B. It absorbs heat from air while refrigerant boils inside the coil circuits.
- C. It filters, moves and conditions air through coordinated fan, coil, damper and casing sections.
- D. It reduces structure-borne vibration by supporting equipment on a compliant element selected for the load.

Question 4 · Plans installation

During installation of a low-temperature freeze-stat, which action is required for reliable operation?

- A. Locate high and low pressure pickups in representative stable points, connect tubing correctly and set the switch above no-flow effects but below normal flow.
- B. Use the controller's specified resistance curve, place the sensor for representative contact and protect leads from moisture and induced noise.
- C. Pass one intended conductor through the sensor, select a range and threshold below normal load but above leakage or induced current, and wire fail-safe logic as designed.
- D. Distribute the sensing element across the vulnerable coil face, avoid sharp bends and wire manual reset or sequence action as designed.

Question 5 · Plans installation

Which statement best describes the function of an adjustable time-delay relay?

- A. It enforces a minimum compressor off time or restart delay to limit rapid cycling and pressure-related starts.
- B. It controls compatible AC motor speed and torque by varying output frequency and voltage.
- C. It delays energizing, de-energizing or contact transfer for a selected period in a control sequence.
- D. It rotates a damper shaft to position outdoor, return, relief or zone airflow.

Question 6 · Performs installation

What inspection should be included when maintaining a portable confined-space atmospheric monitor?

- A. Perform the user seal check each time and confirm inspection, storage and change-out records.
- B. Inspect the cut for roundness, a square face and a removed internal ridge.
- C. Inspect hooks, latches, chain, brake action and identification, and confirm the load holds during the initial test lift.
- D. Confirm current calibration and a successful bump test using the specified test gas.

Question 7 · Performs installation

Which test is most relevant to the performance of a total external static-pressure measurement?

- A. Add the magnitudes of return negative static and supply positive static as defined and compare with the blower table at measured speed.
- B. Measure each branch flow or valve differential, adjust iteratively and record final valve positions and pump operating point.
- C. Measure concentration with a temperature-compensated refractometer suited to the glycol type and verify fluid chemistry by the required test.
- D. Cross-check every required field against source test sheets and ensure no unresolved deficiency is represented as passed.

Question 8 • Commissioning

Which check most directly verifies the condition or operation of compressor oil analysis?

- A. Compare spectra and overall trend with baseline and correlate peaks with running speed, blade pass and bearing frequencies.
- B. Check at two or more points when span matters and document as-found, as-left and reference instrument data.
- C. Record heater current or valve state, coil temperatures, termination time, drainage and fan restart temperature.
- D. Trend laboratory results against the same oil and compressor baseline and interpret them with filter and operating history.

Question 9 • Maintenance and service

While troubleshooting, the technician finds that frost extends across the accumulator and liquid is evident at its outlet during stable operation. Which finding best explains the condition?

- A. Investigate severe floodback, an undersized accumulator or a damaged internal outlet before restarting the compressor.
- B. Check outlet valve position, dip-tube connection and receiver orientation before adding charge.
- C. Check liquid-line pressure drop and receiver or head-pressure control operation instead of using bubbles alone as proof of low charge.
- D. Reject the cap, make the system safe and replace or assess the relief device and the cause of overpressure.

Question 10 • Maintenance and service

During service, head pressure rises when heat reclaim is enabled but the secondary-fluid pump is not running. What is the best interpretation or next action?

- A. Disable or bypass reclaim and restore the heat sink or proving interlock before continued operation.
- B. Verify the economizer metering valve, flash-tank level and injection path before changing compressor capacity settings.
- C. Check for a leaking liquid solenoid or excessive pressure-control differential before bypassing pump-down.
- D. Verify the head-pressure control valve ports, setting and receiver-pressure function before adding seasonal charge.

Question 11 • Common occupational skills

Which statement best describes the function of a lockout and verification procedure?

- A. It controls hazardous energy so work cannot be exposed to unexpected start-up or release.
- B. It provides selected, fitted and managed respiratory protection when engineering controls alone do not adequately control an identified inhalation hazard.
- C. It controls ignition, fire and post-work smouldering hazards created by brazing or cutting.
- D. It supplies controlled heat to bring the joint and filler alloy to brazing temperature.

Question 12 · Common occupational skills

A technician observes that a new tube joint has an unexplained restriction immediately beside the cut end. Which response is most technically appropriate?

- A. Replace the damaged flare and tighten a newly prepared joint to specification rather than tightening it further.
- B. Recalculate leg tension and change the rigging because decreasing sling angle increases force in each leg.
- C. Inspect for an unremoved internal burr or a tube distorted by excessive cutter pressure.
- D. Remove the regulator from service because seat leakage is causing pressure creep.

Question 13 · Common occupational skills

Which check most directly verifies the condition or operation of an oxy-fuel brazing torch setup?

- A. Check the identification tag and reject cuts, melted fibres, damaged stitching, chemical attack or other removal criteria.
- B. Confirm leak-free connections, stable regulator delivery and a neutral or specified flame before heating the joint.
- C. Confirm calibration status and use a controlled check fixture or calibration service at the required interval.
- D. Perform a blank-off check and compare remote-system micron response with pump-side pressure during evacuation.

Question 14 · Maintenance and service

An operational check shows that the receiver contains liquid but the downstream line receives vapour after a replacement valve was installed. Which decision is justified by this evidence?

- A. Check for a stuck plunger, reversed flow, debris or inadequate pressure differential rather than replacing the energized coil automatically.
- B. Treat the drier as restricted and replace it after making the system safe instead of adding refrigerant.
- C. Correct bulb contact, position and insulation before adjusting or replacing the valve.
- D. Check outlet valve position, dip-tube connection and receiver orientation before adding charge.

Question 15 · Maintenance and service

During service, the liquid line is subcooled upstream but flashes and becomes colder immediately across the filter-drier. What is the best interpretation or next action?

- A. Treat the drier as restricted and replace it after making the system safe instead of adding refrigerant.
- B. Check liquid-line pressure drop and receiver or head-pressure control operation instead of using bubbles alone as proof of low charge.
- C. Test the branch check valve for leakage or incorrect orientation before changing the control sequence.
- D. Check actual valve movement, wiring, step calibration and blockage before changing the refrigerant charge.

Question 16 · Maintenance and service

The service call reports that bubbles appear during a low-ambient condition even though measured subcooling at the condenser outlet is adequate. What should be concluded or checked first?

- A. Repair the stem packing or valve and retain a sealing cap; back-seating alone is not a permanent repair.
- B. Check for a stuck plunger, reversed flow, debris or inadequate pressure differential rather than replacing the energized coil automatically.
- C. Suspect a partial capillary restriction and verify it rather than adding charge to overcome the restriction.
- D. Check liquid-line pressure drop and receiver or head-pressure control operation instead of using bubbles alone as proof of low charge.

Question 17 · Maintenance and service

The system has the following condition: the coil is energized and magnetic, but no liquid passes through the valve. What is the best corrective direction?

- A. Test the branch check valve for leakage or incorrect orientation before changing the control sequence.
- B. Reject the cap, make the system safe and replace or assess the relief device and the cause of overpressure.
- C. Check for a stuck plunger, reversed flow, debris or inadequate pressure differential rather than replacing the energized coil automatically.
- D. Verify that the installed orifice is not oversized or reversed before changing the charge.

Question 18 · Maintenance and service

The measured behaviour is that refrigerant migrates backward through an idle branch and chills the inactive evaporator. What is the most defensible next step?

- A. Repair the stem packing or valve and retain a sealing cap; back-seating alone is not a permanent repair.
- B. Correct bulb contact, position and insulation before adjusting or replacing the valve.
- C. Test the branch check valve for leakage or incorrect orientation before changing the control sequence.
- D. Perform an efficiency or valve test because leaking reeds or internal wear can cause re-expansion and low capacity.

Question 19 · Maintenance and service

A technician observes that a back-seated valve stops leaking at the stem until the stem is moved for service. Which response is most technically appropriate?

- A. Reject the cap, make the system safe and replace or assess the relief device and the cause of overpressure.
- B. Check actual valve movement, wiring, step calibration and blockage before changing the refrigerant charge.
- C. Repair the stem packing or valve and retain a sealing cap; back-seating alone is not a permanent repair.
- D. Stop it promptly and correct phase sequence before assuming mechanical failure.

Question 20 • Maintenance and service

While troubleshooting, the technician finds that a technician proposes capping a relief outlet because it has weeped after a pressure event. Which finding best explains the condition?

- A. Correct bulb contact, position and insulation before adjusting or replacing the valve.
- B. Suspect a partial capillary restriction and verify it rather than adding charge to overcome the restriction.
- C. Reject the cap, make the system safe and replace or assess the relief device and the cause of overpressure.
- D. Verify the unloading mechanism, oil or hydraulic control and position feedback before adding refrigerant.

Question 21 • Maintenance and service

An operational check shows that superheat hunts widely after the bulb was mounted loosely on the bottom of a large horizontal suction line. Which decision is justified by this evidence?

- A. Check actual valve movement, wiring, step calibration and blockage before changing the refrigerant charge.
- B. Correct bulb contact, position and insulation before adjusting or replacing the valve.
- C. Verify that the installed orifice is not oversized or reversed before changing the charge.
- D. Move operation away from surge and verify vane, speed or bypass controls and heat-exchanger conditions.

Question 22 • Maintenance and service

During service, the controller commands the valve open but suction pressure and superheat do not change. What is the best interpretation or next action?

- A. Suspect a partial capillary restriction and verify it rather than adding charge to overcome the restriction.
- B. Check actual valve movement, wiring, step calibration and blockage before changing the refrigerant charge.
- C. Perform an efficiency or valve test because leaking reeds or internal wear can cause re-expansion and low capacity.
- D. Correct clearance, wind effects or barriers causing recirculation rather than increasing condenser fan speed blindly.

Question 23 • Routine trade activities

Which test is most relevant to the performance of a heat-reclaim condenser coil?

- A. Measure reclaimed heat-side flow and temperature rise together with refrigerant condensing pressure and bypass-valve position.
- B. Measure intermediate pressure, injection superheat, liquid subcooling and capacity response when the economizer is enabled.
- C. Observe closure, suction pressure decay, compressor stop and off-cycle pressure rebound through several calls.
- D. Trend condensing pressure, receiver liquid availability and valve pressure differentials as ambient temperature changes.

Question 24 · Maintenance and service

While troubleshooting, the technician finds that a valve moves only a few percent while room temperature swings above and below setpoint. Which finding best explains the condition?

- A. Check for oversized valve authority or excessive differential pressure before increasing controller gain.
- B. Inspect a slipping shaft clamp or disconnected linkage before recalibrating the controller signal.
- C. Assign a unique address and confirm network integrity before replacing the trunk cable.
- D. Correct failed-stage detection and enable the designed lag-stage takeover rather than narrowing all stage differentials.

Question 25 · Commissioning

Why is rotating-equipment vibration analysis used in this trade application?

- A. It tracks changes in winding-to-ground insulation condition under comparable test conditions.
- B. It removes scale, sediment or biological fouling that increases approach temperature and pressure drop.
- C. It preserves the ability to use favourable outdoor air for cooling while maintaining ventilation, pressure and low-limit protection.
- D. It uses vibration amplitude, frequency and trend to identify developing imbalance, misalignment, looseness or bearing defects.

Answers and explanations

1. Answer B

For a digital multimeter, use a meter with the required category and rating, select the correct function and prove it on a known source before and after a zero-energy test.

2. Answer B

For a centrifugal refrigeration compressor, maintain exceptionally clean piping, correct alignment and specified oil or magnetic-bearing systems, and commission anti-surge controls.

3. Answer B

For a direct-expansion evaporator coil, it absorbs heat from air while refrigerant boils inside the coil circuits.

4. Answer D

For a low-temperature freeze-stat, distribute the sensing element across the vulnerable coil face, avoid sharp bends and wire manual reset or sequence action as designed.

5. Answer C

For an adjustable time-delay relay, it delays energizing, de-energizing or contact transfer for a selected period in a control sequence.

6. Answer D

For a portable confined-space atmospheric monitor, confirm current calibration and a successful bump test using the specified test gas.

7. Answer A

For a total external static-pressure measurement, add the magnitudes of return negative static and supply positive static as defined and compare with the blower table at measured speed.

8. Answer D

For compressor oil analysis, trend laboratory results against the same oil and compressor baseline and interpret them with filter and operating history.

9. Answer A

For a suction accumulator, investigate severe floodback, an undersized accumulator or a damaged internal outlet before restarting the compressor.

10. Answer A

For a heat-reclaim condenser coil, disable or bypass reclaim and restore the heat sink or proving interlock before continued operation.

11. Answer A

For a lockout and verification procedure, it controls hazardous energy so work cannot be exposed to unexpected start-up or release.

12. Answer C

For a wheel-type copper-tube cutter, inspect for an unremoved internal burr or a tube distorted by excessive cutter pressure.

13. Answer B

For an oxy-fuel brazing torch setup, confirm leak-free connections, stable regulator delivery and a neutral or specified flame before heating the joint.

14. Answer D

For a liquid receiver, check outlet valve position, dip-tube connection and receiver orientation before adding charge.

15. Answer A

For a replaceable-core or sealed liquid-line filter-drier, treat the drier as restricted and replace it after making the system safe instead of adding refrigerant.

16. Answer D

For a liquid-line sight glass with moisture indicator, check liquid-line pressure drop and receiver or head-pressure control operation instead of using bubbles alone as proof of low charge.

17. Answer C

For a refrigerant liquid-line solenoid valve, check for a stuck plunger, reversed flow, debris or inadequate pressure differential rather than replacing the energized coil automatically.

18. Answer C

For a refrigerant check valve, test the branch check valve for leakage or incorrect orientation before changing the control sequence.

19. Answer C

For a manual refrigeration service valve, repair the stem packing or valve and retain a sealing cap; back-seating alone is not a permanent repair.

20. Answer C

For a refrigerant pressure-relief valve, reject the cap, make the system safe and replace or assess the relief device and the cause of overpressure.

21. Answer B

For a thermostatic expansion valve, correct bulb contact, position and insulation before adjusting or replacing the valve.

22. Answer B

For an electronic expansion valve, check actual valve movement, wiring, step calibration and blockage before changing the refrigerant charge.

23. Answer A

For a heat-reclaim condenser coil, measure reclaimed heat-side flow and temperature rise together with refrigerant condensing pressure and bypass-valve position.

24. Answer A

For a modulating hydronic control valve, check for oversized valve authority or excessive differential pressure before increasing controller gain.

25. Answer D

For rotating-equipment vibration analysis, it uses vibration amplitude, frequency and trend to identify developing imbalance, misalignment, looseness or bearing defects.