

Construction Electrician 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 309A. The real Red Seal exam has 100 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/construction-electrician-red-seal-practice-test>

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Questions

Question 1 · Common occupational skills

A pre-use inspection finds a crack across the viewing area of the face shield specified for a cutting task. What should the electrician do?

- A. Keep using it with safety glasses until the next scheduled inspection.
- B. Remove it from service and obtain suitable undamaged protection.
- C. Use it only for short cuts to limit the exposure time.
- D. Cover the crack with transparent tape and complete this cut.

Question 2 · Common occupational skills

An access route for an elevating platform passes near overhead electrical conductors. The required approach limits and safe travel envelope have not been established. Which action is appropriate before moving the platform there?

- A. Have the required safe route and clearances established first.
- B. Proceed slowly and estimate the distance from ground level.
- C. Proceed because rubber tyres establish an electrical clearance.
- D. Raise the platform to see whether the conductors are within reach.

Question 3 · Common occupational skills

The approved beam-clamp detail specifies mechanical attachment and its locking hardware. A worker proposes welding the clamp to the beam as an extra precaution. No welding or structural modification is approved. What should be done?

- A. Omit the locking hardware once the clamp is welded.
- B. Add the weld because any extra attachment necessarily improves the design.
- C. Weld only one corner so the change need not be documented.
- D. Use the approved beam clamp without the added weld.

Question 4 · Generating, distribution and service systems

For a nameplate comparison only, what apparent power corresponds to 240 V and 150 A on a single-phase service? Do not apply demand factors.

- A. 36 kVA
- B. 360 kVA
- C. 18 kVA
- D. 62.3 kVA

Question 5 · Generating, distribution and service systems

A breaker has a 100 A continuous rating and a 25 kA interrupting rating at its specified voltage. What does the 25 kA rating describe?

- A. Its rated ability to interrupt prospective fault current
- B. Its measured leakage current to the bonding path
- C. Its adjustable long-time pickup setting
- D. Its permitted continuous load current

Question 6 · Generating, distribution and service systems

An enclosure's supplied documentation states protection against specified dust, water and corrosion exposure in non-hazardous locations. Does that environmental description alone establish suitability for an explosive atmosphere?

- A. No; the required hazardous-location suitability must be separately verified
- B. No documentation is needed if the metal wall is thick
- C. Yes; corrosion protection replaces every other location approval
- D. Yes; any water-resistant enclosure is automatically explosion-protected

Question 7 · Generating, distribution and service systems

A 960 W load has a stated 0.80 power factor. Ignoring all other conditions, what apparent-power rating is the smallest listed value that meets this load?

- A. 960 VA
- B. 1200 VA
- C. 768 VA
- D. 1920 VA

Question 8 · Generating, distribution and service systems

A new rooftop plant platform extends above and beyond the structure covered by the existing lightning-protection drawing. The installation crew has no revised protection layout. What should occur before extending the lightning system?

- A. Remove the nearest down conductor to keep the roof less congested
- B. Obtain a revised protection design addressing the platform and its connections
- C. Bond only the platform handrail and assume interception coverage is unchanged
- D. Extend the nearest air terminal by an arbitrary length

Question 9 • Generating, distribution and service systems

A storage system must deliver 3.0 kWh to its AC loads. The supplied design permits using 80% of nominal battery energy and assumes 90% battery-to-load conversion efficiency. Which nominal battery size is the smallest adequate option?

- A. 3.0 kWh
- B. 3.6 kWh
- C. 5.0 kWh
- D. 4.0 kWh

Question 10 • Generating, distribution and service systems

A sensor requires regulated 24 V DC only. A proposed replacement unit is a plain 24 V AC transformer with adequate VA capacity and no rectifier or regulator. Is it a direct compatible supply for the sensor?

- A. Yes; a transformer automatically rectifies its output
- B. Yes; reversing the secondary leads converts AC to DC
- C. Yes; any 24 V source is interchangeable at equal VA
- D. No; matching the number 24 does not make an AC output a regulated DC supply

Question 11 • Wiring systems

In a jacketed power cable, what is the principal function of the outer jacket, as distinct from the insulation on each conductor?

- A. Establish the final tightening torque of the conductor terminals.
- B. Identify the electrical phase of every conductor without opening the cable.
- C. Protect the underlying cable components against the exposures for which the jacket is rated.
- D. Provide the individual dielectric separation between every pair of conductors.

Question 12 • Wiring systems

The approved conduit-fill worksheet allows 210 mm² of insulated-conductor area. Existing conductors occupy six areas of 18 mm² and two areas of 25 mm². No conductors will be removed. What area remains available under this worksheet?

- A. 102 mm².
- B. 66 mm².
- C. 158 mm².
- D. 52 mm².

Question 13 • Wiring systems

On a lighting equipment schedule, which term denotes the complete installed assembly that holds or contains the light source and distributes its light, rather than just the replaceable light source?

- A. Lampholder
- B. Driver
- C. Lamp
- D. Luminaire

Question 14 · Wiring systems

What is the primary sensed input of a photocell used to switch ordinary exterior lighting according to darkness?

- A. Ambient light level at the sensor
- B. The number of people in the room
- C. The calendar date alone
- D. The load's branch current

Question 15 · Wiring systems

The supplied pedestrian-request interface requires a normally-open contact that closes only while the button is pressed and opens when it is released. All four replacement buttons meet the stated electrical and environmental ratings. Which operating mechanism matches this requirement?

- A. A momentary button with only a normally-closed contact
- B. A maintained push-on/push-off button with a normally-open contact
- C. A momentary, spring-return button with a normally-open contact
- D. A maintained two-position selector that stays in the request position

Question 16 · Wiring systems

A fan runs at its approved speed and a separate instrument confirms the expected pressure difference across it. The airflow switch, verified on a test pressure source, still reports no flow. Both of its sensing tubes are found connected to the downstream plenum, where their pressures are equal. Which correction addresses the evidence?

- A. Increase fan speed until the two downstream pickups show different pressures.
- B. Replace the tested switch with one having the same connections.
- C. Reverse the electrical contact pair but leave the sensing tubes unchanged.
- D. Reconnect the pressure pickups to the specified high- and low-pressure locations.

Question 17 · Wiring systems

A two-stage electric heater has a 2 kW first stage and a 4 kW second stage. Its documented capacity controller must be configured with the actual individual stage sizes. After replacement it is set to 3 kW for each stage. A 3 kW request brings on only stage 1; measured stage powers are correctly 2 kW and 4 kW when individually tested. What is the supported correction?

- A. Replace stage 1 solely because its measured power is 2 kW.
- B. Enter the actual stage capacities and verify the approved staging response.
- C. Raise the supply voltage until stage 1 produces 3 kW.
- D. Configure both stages as 2 kW because that matches the first measurement.

Question 18 · Motors and control systems

A starter switches a 600 V three-phase motor, but its coil terminals receive 120 V AC, 60 Hz. Which coil rating must be selected for this control circuit?

- A. 24 V AC, 60 Hz
- B. 600 V AC, 60 Hz
- C. 120 V AC, 60 Hz
- D. 120 V DC

Question 19 · Motors and control systems

The supplied sensor instructions state that a PNP proximity output switches +24 V onto its output lead when actuated. The receiving interface expects current into its input and returns that current to 0 V. Which connection principle is correct?

- A. Use an input that also sources +24 V without checking its circuit.
- B. Connect the output directly to 0 V whenever the sensor is actuated.
- C. Omit the common reference because the output is electronic.
- D. Connect the sourcing PNP output to the compatible sinking input, with the specified common reference.

Question 20 · Motors and control systems

A project requires an AC drive to motor in either direction and return energy to the supply during frequent controlled deceleration. The supply interface must be approved for that operation. Which proposed capability is necessary?

- A. A conventional non-regenerative drive solely because it can reverse motor rotation
- B. Regenerative operation with a suitable bidirectional-power supply interface
- C. A braking resistor alone, because dissipated heat is energy returned to the supply
- D. A longer acceleration ramp with no review of the input power stage

Question 21 · Motors and control systems

A single-phase fan motor hums but does not start. After lockout, capacitor discharge and isolation of the winding leads, the main winding measures within its supplied range, while the auxiliary winding measures open circuit. The capacitor tests within specification and the shaft turns freely. Which finding best explains the failure to start?

- A. An open auxiliary-winding path.
- B. Normal no-load behaviour of this motor.
- C. A seized fan shaft.
- D. A capacitor with excessive capacitance.

Question 22 · Motors and control systems

A replacement DC motor will operate continuously at high torque and 150 r/min. The supplied motor application sheet says its shaft-mounted fan is insufficient below 600 r/min at this torque and requires the specified independent blower with proven airflow. All electrical and mechanical ratings otherwise match. What is essential before accepting this installation?

- A. Provide the approved independent blower with airflow proving.
- B. Increase armature voltage while retaining the same speed command and cooling arrangement.
- C. Remove the motor's temperature monitoring to avoid low-speed interruptions.
- D. Accept the shaft fan because it turns whenever the motor turns.

Question 23 · Signalling and communication systems

In fire-alarm terminology, which indication identifies a detected condition that may impair the system itself, such as an open supervised circuit?

- A. Supervisory
- B. Trouble
- C. Fire alarm
- D. Normal

Question 24 · Signalling and communication systems

An approved 24 V locking circuit requires at least 21 V at the lock under load. With the lock drawing its specified current, the source remains at 24.0 V but the lock terminals measure 19.2 V. A compatible known-good lock gives the same result on that field path. What is the best next action?

- A. Investigate conductor and connection voltage drop along the field supply path
- B. Replace the original lock without testing the field wiring
- C. Raise the source above its approved voltage range to force the lock to operate
- D. Change the access permission list because the lock voltage is low

Question 25 · Signalling and communication systems

A repaired communications outlet passes its specified retest. The permanent label reads C-218, but the saved report is named C-281. What is needed before closeout?

- A. Delete the permanent label so the mismatch cannot be seen
- B. Verify and correct the tested-link/report association
- C. Leave both identifiers because the electrical result passed
- D. Assign the same passing report to all nearby outlets

Answers and explanations

1. Answer B

The crack compromises the intended protection; replacement is needed before the task.

2. Answer A

The route cannot be accepted until the electrical exposure is assessed and controlled.

3. Answer D

The proposed weld changes the approved attachment method and may affect the components or structure.

4. Answer A

Single-phase apparent power is $240 \times 150 = 36\,000$ VA, which equals 36 kVA. This is not a complete Code service-sizing calculation or a continuous-loading approval.

5. Answer A

The interrupting rating addresses interruption of fault current under specified conditions, not normal load-carrying capacity. The applicable voltage and complete equipment rating must also be checked. A large interrupting number does not increase the allowable load current.

6. Answer A

Environmental ingress and corrosion performance do not by themselves establish the separate protection needed for an explosive atmosphere. The question deliberately supplies a non-hazardous environmental description and cites no unverified enclosure-type or Code rule. Select equipment against the actual assessed environment.

7. Answer B

Apparent power is $P/PF = 960/0.80 = 1200$ VA. This is a stated-load calculation, not a complete equipment-sizing rule.

8. Answer B

The changed structure can alter interception coverage and required interconnections. A revised design establishes the appropriate arrangement before installation. Treat the roof addition as a design change rather than a like-for-like repair. Document the revised coverage, routes and connection details in the as-built package.

9. Answer C

Required nominal energy is $3.0 / (0.80 \times 0.90) = 4.167$ kWh. Of the listed sizes, 5.0 kWh is the smallest above that requirement. The calculation uses the supplied fractions, not a universal recommendation for battery discharge depth. Power capability, temperature, ageing reserve and product compatibility require separate checks.

10. Answer D

The required waveform and regulation are absent. Adequate VA and equal nominal voltage do not satisfy a DC-only input specification. Select an approved supply matching all of the sensor's electrical requirements. Do not infer compatibility from voltage magnitude alone.

11. Answer C

The jacket provides the cable's outer protective barrier; its suitability depends on its material and markings.

12. Answer D

Existing occupation is $6 \times 18 + 2 \times 25 = 158$ mm². Subtracting from 210 leaves 52 mm².

13. Answer D

The distinction matters when ordering or replacing equipment. A luminaire includes the assembly needed to support, connect and distribute light; replacing a lamp or driver alone is not necessarily replacement of the complete luminaire.

14. Answer A

The photocell responds to illumination at its installed location. Mounting orientation, shading and light from the controlled luminaires can therefore affect its behaviour. Those installation effects are distinct from an astronomical timer's calculation based on time and location.

15. Answer C

The requirement specifies both the rest state and the mechanical action. Normally open establishes the unpressed state, and momentary spring return ensures that releasing the button ends the closure. A matching electrical rating alone does not establish the required request behaviour.

16. Answer D

The fan and switch each pass an independent check. The two equal-pressure pickup locations explain why the installed switch cannot prove airflow.

17. Answer B

The individual tests separate a configuration error from a defective element. Correct the supplied controller's individual capacity settings, then verify its documented sequencing; no universal staging algorithm is assumed.

18. Answer C

The coil must match its own control supply. The voltage switched by the main contacts is a separate rating.

19. Answer D

The sensor supplies positive current and the input provides the return path. Matching this direction and the common reference completes the signal circuit.

20. Answer B

Returning energy to the supply requires a suitable regenerative power path. Reversing rotation alone does not establish that the input stage can export energy.

21. Answer A

The confirmed open path prevents the auxiliary current required for starting in this arrangement.

22. Answer A

The stated low-speed duty lies outside the self-cooling capability; matching torque rating alone does not establish thermal suitability.

23. Answer B

A trouble indication identifies a system problem requiring investigation; it does not by itself establish that a fire exists. An open supervised conductor is an example. Read the specific panel message and follow the site response procedure. Distinguishing the categories helps direct troubleshooting without treating a fault as either a confirmed fire or a harmless normal state.

24. Answer A

The source holds 24.0 V, while 4.8 V is lost before the lock. Repeating the result with a known-good lock points toward the shared field supply path rather than the original lock alone. Measure and inspect that path using the approved safe procedure, including terminations and conductor suitability. The 19.2 V terminal value also fails the supplied 21 V requirement.

25. Answer B

A passing result is useful only when it can be reliably assigned to the installed link. Confirm which outlet and cable were tested before correcting the record; do not guess which identifier is wrong. Keep the permanent labels, as-built information and saved test evidence consistent. Retest if the association cannot be established, because an untraceable pass cannot certify a different or unknown outlet.