

Machinist 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 429A. The real Red Seal exam has 135 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/machinist-red-seal-practice-test>

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Questions

Question 1 • Common occupational skills

After electrical isolation, a vertical machine axis still tends to descend. What must be addressed before work begins?

- A. Work quickly before the axis moves very far
- B. Place the control in incremental mode
- C. Rely on the servo brake because power is off
- D. Block or restrain the stored mechanical energy.

Question 2 • Benchwork

After a tang-driven insert is installed to the specified depth, what final step may be required before assembly?

- A. Fill the insert with grinding dust
- B. Remove the tang; verify insert position and thread.
- C. Pull the insert back out with the bolt
- D. Leave the tang for the fastener to break during assembly

Question 3 • Power saws

Which power saw is normally preferred for repetitive straight cut-off work on bar and structural stock?

- A. A surface grinder with a thin wheel used as a saw
- B. A supported horizontal band-saw setup.
- C. A drill press with the work rotated against the drill
- D. A vertical contour band saw with the stock hanging unsupported

Question 4 • Drill presses

Using the common metric approximation $\text{tap-drill diameter} = \text{major diameter} - \text{pitch} \times 1.5$, what drill is indicated for M10

- A. 15.0 mm
- B. 11.5 mm
- C. 6.67 mm
- D. 8.5 mm

Question 5 · Conventional lathes

With tool geometry and rigidity unchanged, what is the usual surface-finish effect of lowering feed per revolution?

- A. The spindle automatically reverses
- B. Feed marks become farther apart
- C. Feed reduction lowers theoretical roughness
- D. Workholding runout is automatically removed

Question 6 · Conventional lathes

A diameter is 0.08 mm oversize and the cross-slide dial reads actual radial movement. What nominal additional infeed is required?

- A. 0.16 mm
- B. 0.08 mm
- C. 0.04 mm
- D. 0.02 mm

Question 7 · Conventional milling machines

Which conventional mill is normally most versatile for one-off work involving end milling, drilling, and top-surface features?

- A. A centreless grinder
- B. A vertical knee mill.
- C. A dedicated horizontal gear hobber
- D. A power band saw

Question 8 · Conventional milling machines

A boring head reads radial movement. To enlarge a bore by 0.10 mm, what nominal head adjustment is required?

- A. 0.20 mm outward
- B. 0.10 mm outward
- C. 0.05 mm outward
- D. 0.05 mm inward

Question 9 · Precision grinding machines

Which precision grinding machine should be selected to produce a close-tolerance flat face on a rectangular hardened-steel block?

- A. A suitable surface grinder with secure, accurate workholding
- B. An internal grinder with a small spindle mounted inside a bore
- C. An external cylindrical grinder using centres for the rectangular block
- D. A tool-and-cutter grinder selected only because it has a grinding wheel

Question 10 · CNC machines

A hole is 50 mm from the X datum and 30 mm from the Y datum. With the work origin at the datum intersection and absolute programming active, what endpoint should be programmed?

- A. X50.000 Y-30.000
- B. X1.969 Y1.181 while the program remains explicitly in millimetres
- C. X20.000 Y80.000
- D. X50.000 Y30.000

Question 11 · Common occupational skills

A blind internal groove is unclear in the exterior view. Which drawing information should be used to define it?

- A. The dimensioned section or detail view.
- B. The nearest external groove dimensions
- C. The stock supplier's nominal bar size
- D. The pictorial view scaled with a ruler

Question 12 · Common occupational skills

A shaft is specified as 25.000 +0.000/-0.018 mm. What are its permissible size limits?

- A. 25.000 mm minimum and 25.018 mm maximum
- B. 24.982 mm minimum and 25.018 mm maximum
- C. 24.982 mm minimum and 25.000 mm maximum
- D. 24.991 mm minimum and 25.009 mm maximum

Question 13 · Benchwork

A shaft repeatedly cracks from the corner of a keyway. What design or repair factor should be investigated?

- A. Keyway stress concentration, cyclic loading, surface condition and fatigue strength.
- B. Whether the shaft was measured in millimetres
- C. Whether a surface plate was nearby
- D. Whether the key was stored in a blue bin before assembly and kept there until reassembly

Question 14 · Power saws

A large solid aluminum billet loads a fine-pitch blade with chips. What blade change should be considered?

- A. Remove tooth set so the kerf becomes narrower than the blade body
- B. Use an even finer pitch so more chips fit between teeth
- C. Use coarser teeth with adequate gullets and engagement.
- D. Select a brittle blade intended only for glass

Question 15 · Drill presses

A reamed hole is on size at entry but smaller at the bottom. What should be investigated?

- A. Measure only the entry and accept the hole
- B. Reverse the reamer repeatedly at the bottom, increase dwell until the lower diameter opens, and accept the entry reading as proof that alignment is correct
- C. Check prehole taper, reamer alignment/runout, wear, chips, fluid, deflection and depth
- D. Increase runout to enlarge the bottom

Question 16 · Conventional lathes

Ignoring approach, how long does a 120 mm turning pass take at 400 rpm and 0.25 mm/rev?

- A. 1.20 min
- B. 4.80 min
- C. 12.0 min
- D. 0.30 min

Question 17 · Conventional lathes

Longitudinal turning is stable, but the tool chatters when feeding radially into a shoulder. What should be evaluated?

- A. Evaluate entering angle, clearance, radial engagement, nose radius, overhang and strategy
- B. Remove all side clearance so the tool rubs against the shoulder
- C. Increase tool overhang to give the vibration room
- D. Only the finished shaft length

Question 18 · Conventional lathes

A short external taper has an included angle of 20° . How should the compound be set when its scale is verified as reading from the work axis?

- A. Set it to the full 20° included angle
- B. Set it to 70° because every scale uses the complement
- C. Set it to the 10° half-angle and feed along the compound
- D. Leave it at 0° and vary spindle speed to create the taper

Question 19 · Conventional milling machines

A four-tooth end mill runs at 600 rpm with 0.08 mm/tooth. What table feed is required?

- A. 19.2 mm/min
- B. 2,400 mm/min
- C. 192 mm/min
- D. 48 mm/min

Question 20 · Conventional milling machines

A four-tooth cutter runs at 900 rpm and table feed is 360 mm/min. What is feed per tooth?

- A. 3,240,000 mm/tooth
- B. 0.40 mm/tooth
- C. 0.10 mm/tooth
- D. 810 mm/tooth

Question 21 · Conventional milling machines

A long end mill chatters at a particular rpm and radial engagement. What is the sound correction path?

- A. Increase overhang and keep the same cutting data
- B. Shorten overhang or improve support, then test a meaningful speed change and suitable engagement/feed within tool guidance
- C. Reduce feed to pure rubbing without changing speed
- D. Keep the same speed, radial engagement and overhang while nominal dimensions remain close, then reduce feed only after chatter becomes visible on the finished surface

Question 22 · Precision grinding machines

A part shifts on a magnetic chuck during the first grinding pass. What should be done?

- A. Increase downfeed so wheel pressure is expected to hold the shifted part against the magnetic chuck, then continue without stopping to restore clean contact, pole coverage, blocking, suitable force or alternate workholding
- B. Continue because the part will seat itself
- C. Apply oil under the part as an adhesive
- D. Stop safely, inspect contact and magnetism, clean/stone surfaces, improve pole contact and blocking, reduce force, and use a suitable alternate fixture if holding remains inadequate

Question 23 · CNC machines

On a 100 mm bolt circle, what are the X and Y coordinates of the hole at 30° from positive X, with the circle centre at the work origin?

- A. X86.603 Y50.000
- B. approx. X43.301 Y25.000
- C. X50.000 Y0.000
- D. X25.000 Y43.301

Question 24 · CNC machines

A CNC-turned outside diameter measures 0.06 mm oversize on a control that displays X offsets in diameter values. What magnitude of X wear correction is required?

- A. Enter a 0.03 mm correction in the diameter-value X register because the radial error is half the measured diameter error, without accounting for the control displaying and applying X offsets as diameter values
- B. A 0.06 mm Z correction
- C. A 0.06 mm diameter correction in the direction that moves the tool 0.03 mm radially inward
- D. A 0.12 mm diameter correction

Question 25 · CNC machines

A finish-bored hole is 0.03 mm undersize. The boring tool can be adjusted radially at the cutting edge. What physical adjustment is required before considering control-specific sign?

- A. Change axial tool length by 0.03 mm
- B. Move the edge 0.03 mm outward, increasing diameter by 0.06 mm
- C. Move the edge 0.015 mm inward
- D. Move the cutting edge radially outward by 0.015 mm

Answers and explanations

1. Answer D

Electrical isolation does not remove potential energy from an elevated mass.

2. Answer B

A retained tang can obstruct a through fastener or contaminate the assembly.

3. Answer B

Its gravity or controlled-feed head and horizontal blade path suit supported production cut-off work.

4. Answer D

$10.0 - 1.5 = 8.5$ mm before considering the exact thread percentage or specified standard.

5. Answer C

A smaller axial advance separates successive tool-nose tracks by less distance.

6. Answer C

Removing 0.04 mm from the radius reduces the diameter by 0.08 mm.

7. Answer B

Its vertical spindle, movable table and common tooling support these varied operations.

8. Answer C

A 0.05 mm radial increase enlarges diameter by 0.10 mm.

9. Answer A

A surface grinder is designed to generate controlled flat surfaces with table and cross-feed motion.

10. Answer D

Absolute coordinates state the feature position directly from the work origin.

11. Answer A

A section exposes internal geometry that hidden lines alone may not define clearly.

12. Answer C

The upper deviation is zero and the lower deviation subtracts 0.018 mm from basic size.

13. Answer A

A keyway is a geometric discontinuity that amplifies cyclic stress, so its root condition and the material's fatigue resistance are central to the investigation.

14. Answer C

A large section produces high chip volume that requires gullet capacity.

15. Answer C

A reamer tends to follow the existing hole; poor stock distribution or incomplete cutting can leave taper.

16. Answer A

Feed rate is $400 \times 0.25 = 100$ mm/min; $120/100 = 1.20$ min.

17. Answer A

Radial feeding changes force direction and can engage more edge length than longitudinal cutting.

18. Answer C

The tool path follows one side of the taper, which is half the included angle.

19. Answer C

$$0.08 \times 4 \times 600 = 192 \text{ mm/min.}$$

20. Answer C

$$360/(900 \times 4) = 0.10 \text{ mm/tooth.}$$

21. Answer B

Rigidity addresses the structural cause and speed/engagement can move the cut to a stable condition.

22. Answer D

Any movement invalidates geometry and creates an ejection hazard.

23. Answer B

The radius is 50 mm; $X = 50 \cos 30^\circ = 43.301$ and $Y = 50 \sin 30^\circ = 25.000$.

24. Answer C

In diameter programming, a 0.06 mm diameter change corresponds to 0.03 mm radial tool motion.

25. Answer D

A radial change affects both sides of the diameter.