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सहायक लोको पायलट की भर्ती/ Recruitment of Assistant Loco Pilot



RRB ALP 2025 CBT 2

Assistant Loco Pilot · CEN 01/2025 · CBT 2 · Machinist Trade · Part B (Machinist) · Question Paper

English

All 2 Shifts (Sets) · Part B (Machinist) Section · Official Answer Key

About this Compilation

This booklet contains all 2 shift papers of the RRB ALP 2025 CBT 2 (Machinist) examination in English (Part B (Machinist) section only), with the correct option marked as per the official answer key.

✓ Correct option (highlighted green)

How to use

- Use the **Index** page to jump directly to any set (clickable).
- Questions appear section by section in the order of the paper, numbered 1 onward.
- Diagram and wide-table questions appear at full width at the end of their section.
- The correct answer is highlighted in green with a tick.

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Index — All Sets (click to open)

Set 1

28 Jul 2026

9:30 AM - 12:00 PM

Set 2

28 Jul 2026

2:30 PM - 5:00 PM

Part B (Machinist)

75 Questions • Answer Key

Q1 Part B (Machinist)

What is the main function of an indexing plate in a dividing head setup?

- A. To hold the workpiece
- B. To clamp the workpiece
- C. To control spindle speed
- D. To assist in precise divisions ✓

Q2 Part B (Machinist)

A machinist needs to slot multiple identical parts quickly. Which machine vice feature best supports efficient, repeatable clamping?

- A. Single position locking system
- B. Quick-release jaw mechanism ✓
- C. Manual alignment indicator
- D. Fixed jaw only vice

Q3 Part B (Machinist)

A measuring instrument must be selected for verifying the small diameter (d) of a finely finished Morse taper. Which option provides the most accurate and reliable measurement for this application?

- A. A steel rule marked in millimeters
- B. A micrometer calibrated for small diameters ✓
- C. A vernier caliper with standard jaws
- D. A thread gauge for comparing different profiles

Q4 Part B (Machinist)

A file is not removing material efficiently. What is the likely cause?

- A. Handle is too long
- B. Teeth are clogged with debris ✓
- C. File is too light weight
- D. File is painted

Q5 Part B (Machinist)

During the setup of a CNC lathe for a first part check, the machinist is instructed to use the single-block mode. What is the primary reason for activating single-block mode at this stage?

- A. To verify each program block individually for errors ✓
- B. To monitor the machine motion for vibrations only
- C. To check the coolant flow rate during operation
- D. To optimize spindle speed automatically

Q6 Part B (Machinist)

A detailed drawing includes a note: M12 × 1.75. What does the 1.75 specify in screw thread representation?

- A. The pitch of the thread in millimeters ✓
- B. The thread angle measured in degrees
- C. The total length of the threaded portion
- D. The major diameter of the screw thread

Q7 Part B (Machinist)

In marking operations, a V-block is mainly used to:

- A. Measure diameter directly
- B. Measure surface roughness
- C. Mark centres of round bars ✓
- D. Support square plates

Q8 Part B (Machinist)

A machinist needs to calculate the displacement of the follower at 90° cam rotation in a plate cam with uniform velocity motion and a maximum lift of 20 mm over 180°. What will be the follower displacement at 90°?

- A. 20 mm
- B. 15 mm
- C. 5 mm
- D. 10 mm ✓



Q9 Part B (Machinist)

When should an operator use the Emergency Stop button on the CNC VMC panel during machining?

- A. If the program requires routine setup adjustment
- B. If the program requires routine process adjustment
- C. If the program needs editing or recalibration
- D. If there is a risk of injury or machine damage ✓

Q10 Part B (Machinist)

When using MPG mode on a CNC lathe, what does rotating the handwheel achieve?

- A. Changes tool length offset values in the system
- B. Increases spindle speed proportionally to rotation
- C. Moves the selected machine axis in small increments ✓
- D. Selects between different part programs loaded

Q11 Part B (Machinist)

Why is centre punching necessary on curved or cylindrical surfaces?

- A. Curved surfaces increase drilling speed automatically
- B. Drill bit tends to slip more easily on curved surfaces ✓
- C. Curved surfaces always contain soft metal layers
- D. Curved surfaces reduce hardness of metals

Q12 Part B (Machinist)

A CNC turning operation is set to cut an external metric thread on a steel workpiece. If the thread pitch and minor diameter are already specified, which parameter must be accurately programmed in the tool path to ensure the correct thread profile and depth?

- A. Spindle RPM setting
- B. Coolant flow rate adjustment
- C. Tool nose radius compensation
- D. Thread depth per pass value ✓

Q13 Part B (Machinist)

In a cylindrical grinding operation, an operator needs to remove material from the entire surface of a short, stepped workpiece in a single pass. Which method should be selected for efficient operation?

- A. Plunge grinding with stationary table ✓
- B. Traverse grinding with reciprocating table
- C. Creep feed grinding for cylindrical surfaces
- D. Centerless grinding for long parts

Q14 Part B (Machinist)

In piloted counterbore nomenclature, what does the term 'body' refer to?

- A. The cutting portion that enlarges the hole ✓
- B. The threaded part for attachment
- C. The handle
- D. The cylindrical guide at the tip

Q15 Part B (Machinist)

What is generally done after drawing the two strokes of an arrowhead?

- A. The enclosed space is neatly filled and darkened ✓
- B. The enclosed space is shaded with random marks
- C. The enclosed space is left completely empty
- D. The enclosed space is removed by erasing lines

Q16 Part B (Machinist)

What is the main reason for wearing gloves when giving first aid for bleeding?

- A. To help stop the bleeding
- B. To protect against infection ✓
- C. To make hands feel comfortable
- D. To keep hands free from dirt

Q17 Part B (Machinist)

As the angle increases beyond 45 degrees, what happens to the tangent value?

- A. Tangent value becomes zero
- B. Tangent value increases above 1 ✓
- C. Tangent value remains constant
- D. Tangent value decreases below 1

Q18 Part B (Machinist)

A machinist needs to cut a rectangular pocket using CNC VMC. Which sequence best ensures accurate straight edges using linear interpolation?

- A. Use G00 to move rapidly around the rectangular pocket without programming coordinates.
- B. Use G03 to create all edges of rectangle as curved segments continuously with different radii.
- C. Program each side of the rectangle using G01 with defined start and end coordinates. ✓
- D. Apply G02 to create all sides of rectangle as arcs with one radius value and fixed center.



Q19 Part B (Machinist)

Which machining problem can be minimized by correctly grinding a lathe cutting tool?

- A. Overheating of the lathe machine
- B. Premature tool wear ✓
- C. Rusting of the tool
- D. Vibration of lathe

Q20 Part B (Machinist)

A CNC machinist completes a first part check and notes the outer diameter is correct, but the length is slightly off. What does this suggest about tool offset correction?

- A. Increase the spindle speed for better accuracy
- B. The Z-axis tool offset needs adjustment, not the X-axis ✓
- C. The X-axis tool offset needs to be decreased
- D. Modify the program header for new coordinates

Q21 Part B (Machinist)

Dark lines are observed on the surface of a ground workpiece after finishing. What is the most likely cause of these burn marks during the grinding operation?

- A. Wheel speed is too slow
- B. Wheel is too soft for the material
- C. Wheel is too hard for the material ✓
- D. Sufficient coolant flow

Q22 Part B (Machinist)

If both left-hand and right-hand angles are required to be cut on a plate in a single setup, which tool and approach is most suitable?

- A. Using a double angle milling cutter in a single pass ✓
- B. Using a side and face cutter for each angle separately
- C. Using an end mill with repeated passes for each side
- D. Using a single angle milling cutter with two setups

Q23 Part B (Machinist)

Why is depreciation included in the machine hour rate calculation?

- A. It pays operator wages
- B. It times repairs accurately
- C. It covers power expenses
- D. It spreads asset cost over use ✓

Q24 Part B (Machinist)

Which characteristic is NOT commonly linked with ceramic cutting tool materials?

- A. High toughness ✓
- B. Heat resistance
- C. High hardness
- D. Wear resistance

Q25 Part B (Machinist)

A steel plate is 20 mm thick and 45 mm wide. What is the length of the diagonal across the plate?

- A. 49.24 mm ✓
- B. 47.20 mm
- C. 45.00 mm
- D. 51.00 mm

Q26 Part B (Machinist)

Which of the following best describes the main advantage of using temporary clamps in CNC VMC work-holding?

- A. They are permanently attached to the machine table for stability
- B. They eliminate the need for aligning the workpiece before machining
- C. They allow quick setup changes and reusability for different jobs ✓
- D. They provide the strongest possible holding force during machining

Q27 Part B (Machinist)

What is the primary function of feedback devices in CNC machines?

- A. To store CNC programs as a memory in tape
- B. To lubricate moving machine parts at friction points
- C. To supply power to the servo motors for optimum speed
- D. To monitor and report actual position to the control unit ✓

Q28 Part B (Machinist)

Which statement about the distance from the center in a spiral compared to that in a helix is true?

- A. Both have constant radii
- B. Helix's radius shrinks inward
- C. Spiral's radius changes, helix's radius stays same ✓
- D. Both radii increase



Q29 Part B (Machinist)

Which standard recommends the use of single-stroke lettering in engineering drawings?

- A. ISO : 9001-2000
- B. BS : 8888-2010
- C. IS : 1234-1999
- D. IS : 9609-2001 ✓

Q30 Part B (Machinist)

Which of the following statements best describes the vertical milling attachment?

- A. It offers automatic indexing operation
- B. It enables gear cutting on horizontal machines
- C. It converts horizontal to vertical spindle orientation ✓
- D. It provides rotary table movement

Q31 Part B (Machinist)

Which measuring method is used to examine the concentric alignment of a chuck mounted on a back plate?

- A. Using feeler guage
- B. Using calipers
- C. Visual inspection by the eyes
- D. Using Dial indicator ✓

Q32 Part B (Machinist)

Which protective equipment is essential during a system failure response?

- A. Workshop caps
- B. Insulated gloves ✓
- C. Aprons
- D. Regular cotton gloves

Q33 Part B (Machinist)

Which of the following tool angles affects chip flow during turning operations?

- A. Relief angle
- B. Rake angle ✓
- C. Clearance angle
- D. Point angle

Q34 Part B (Machinist)

What is the formula used to calculate the hourly depreciation of a machine?

- A. $(\text{Cost of Machine} - \text{Replacement Cost}) \div \text{Total Machine Working Hours}$
- B. $(\text{Cost of Machine} + \text{Scrap Value}) \div \text{Total Machine Working Hours}$
- C. $(\text{Cost of Machine} - \text{Scrap Value}) \div \text{Total Machine Working Hours}$ ✓
- D. $(\text{Cost of Machine} \div \text{Scrap Value}) \times \text{Total Machine Working Hours}$

Q35 Part B (Machinist)

Before starting the grinding operation, an operator inspects the wheel for safe operation. Which check is most critical to prevent wheel burst accidents?

- A. Verify the tailstock pressure is set to manufacturer recommendations
- B. Ensure the wheel dresser remains sharp and properly cleaned
- C. Check the coolant system carefully for leaks around the machine area
- D. Conduct a ring test to check for cracks before mounting the wheel ✓

Q36 Part B (Machinist)

Which operation most benefits from using a V-block with a clamp?

- A. Filing flat surfaces
- B. Grinding a rectangular plate
- C. Drilling a hole through a round bar ✓
- D. Measuring internal diameter

Q37 Part B (Machinist)

While setting up a CNC lathe for a new job, it is observed that the tool tip does not align with the programmed workpiece zero point after changing to a longer tool. Which parameter should be adjusted in the machine controller to ensure accurate machining dimensions?

- A. Spindle speed setting
- B. Tool length offset value ✓
- C. Coolant flow rate
- D. Feed rate adjustment



Q38 Part B (Machinist)

In unidirectional dimensioning, how are dimensions placed on the drawing sheet?

- A. Dimensions are placed so they can be read from the bottom edge.** ✓
- B. Dimensions are placed so they can be read from multiple edges.
- C. Dimensions are placed so they can be read from random directions.
- D. Dimensions are placed so they can be read from diagonal angles.

Q39 Part B (Machinist)

Which of the following tasks is NOT suitable for a bench-type drilling machine?

- A. Drilling large diameter holes in heavy beams** ✓
- B. Drilling small holes in sheet metals
- C. Performing counter-sinking operations on light workpieces
- D. Making holes in thin plastic sheets

Q40 Part B (Machinist)

If you replaced a left-hand helix with a right-hand helix in a reversing motion device, what problem might occur?

- A. Thread may loosen** ✓
- B. Thread changes pitch
- C. Thread binds more
- D. Thread stays tight

Q41 Part B (Machinist)

A workshop facing repeated incidents of misplaced hazardous materials should prioritize which advanced housekeeping measure?

- A. Posting warning notices around designated hazardous storage
- B. Providing handling instruction programs for workshop employees
- C. Switching to sealed material containers with safety labeling
- D. Establishing color-coded storage with end-of-shift inspections** ✓

Q42 Part B (Machinist)

What is the primary factor in selecting nose radius for a single-point tool?

- A. Chip flow direction
- B. Desired surface finish** ✓
- C. Cutting speed needed
- D. Tool material used

Q43 Part B (Machinist)

During installation of a new spindle head on a vertical milling machine, what is the most critical step to ensure reliable operation and long-term accuracy?

- A. Lubricating the spindle quill and machine parts after installation
- B. Aligning the spindle head precisely with the vertical machine axis** ✓
- C. Adjusting the table longitudinal stops for travel limits
- D. Tightening all spindle head mounting bolts uniformly

Q44 Part B (Machinist)

A precise gear tooth profile is to be cut on a milling machine. Which milling attachment should be selected to accurately divide the workpiece for this operation?

- A. Dividing head attachment** ✓
- B. Rotary table attachment
- C. Vertical milling attachment
- D. Slotting attachment

Q45 Part B (Machinist)

While preparing a hardened plain carbon steel die, a machinist must ensure uniform grain structure and relieve internal stresses before hardening. Which sequence of heat treatments should be followed to achieve this?

- A. Spheroidizing followed by tempering
- B. Direct quenching without prior normalization
- C. Annealing followed by quenching
- D. Normalizing followed by quenching** ✓

Q46 Part B (Machinist)

Why are V-blocks often used in pairs when supporting long cylindrical workpieces?

- A. To reduce the cost of fixtures
- B. To increase cutting speed
- C. To measure thickness of the workpiece
- D. To provide balanced support and alignment** ✓



Q47 Part B (Machinist)

If a worker cannot find a tool quickly, which principle of Five S is likely not being followed?

- A. Standardize
- B. Shine
- C. Sort
- D. Set in order**

Q48 Part B (Machinist)

If the spindle speed is doubled but the wheel diameter remains the same, what happens to the cutting speed in grinding?

- A. The cutting speed will become four times
- B. The cutting speed will be reduced to half
- C. The cutting speed will also be double**
- D. The cutting speed will remain the same

Q49 Part B (Machinist)

What is the main purpose of heat treatment in metals?

- A. To add weight to the metal
- B. To improve mechanical properties**
- C. To reduce the cost of metal
- D. To change color of the metal

Q50 Part B (Machinist)

In a ram type slotter, what is the main function of the column?

- A. To provide reciprocating motion
- B. To support the ram and table**
- C. To rotate the tool
- D. To cut the slot

Q51 Part B (Machinist)

Which of the following is a direct benefit of using absolute programming in CNC VMC operations?

- A. Less setup time
- B. Shorter programs
- C. Easier error detection**
- D. Faster spindle speed

Q52 Part B (Machinist)

If a drawing specifies a fillet weld with unequal leg lengths, what must the welder ensure during fabrication?

- A. Substitute the specified fillet weld with a standard butt joint configuration.
- B. Produce a finished fillet weld with both legs matching the specified lengths.**
- C. Fabricate the weld with equal leg dimensions regardless of drawing guidelines.
- D. Disregard the required leg measurements and focus entirely on the weld throat.

Q53 Part B (Machinist)

What is one limitation of using the tailstock offset method for taper turning in terms of workpiece setup?

- A. It requires use of rapid feed during the turning operation process
- B. It requires swiveling of the compound rest during setup work
- C. It requires use of a special chuck for mounting workpiece
- D. It requires the workpiece to be held strictly between centers**

Q54 Part B (Machinist)

Which of the following best describes the main difference between annealing and normalizing in heat treatment?

- A. Annealing uses water quenching, while normalizing uses oil quenching
- B. Annealing cools metal slowly in furnace, while normalizing cools metal in air**
- C. Annealing is used after welding, while normalizing is used before welding
- D. Annealing hardens mild steel, while normalizing softens stain-less steel

Q55 Part B (Machinist)

A CNC machine is programmed to move the tool from point X (10, 20) to point Y (50, 60) using linear interpolation. What will be the nature of the tool path between these two points ?

- A. The tool will move in a straight-line path connecting point X and point Y.**
- B. The tool will follow a curved path between the two points.
- C. The tool will move in an arc trajectory from point X to point Y.
- D. The tool will move step-by-step, first along the X-axis and then along the Y-axis.



Q56 Part B (Machinist)

Given the ratio 3:4::6:8, which operation verifies the proportion?

- A. $3 - 4 = 6 - 8$
- B. $3/8 = 6/4$
- C. $3 \times 8 = 6 \times 4$ ✓
- D. $3 + 8 = 6 + 4$

Q57 Part B (Machinist)

What is the defining characteristic of multi-point cutting tools?

- A. Having more than one cutting edge ✓
- B. Used for end cutting action
- C. Having single cutting edge
- D. Used for side cutting action

Q58 Part B (Machinist)

During CNC lathe setup, the spindle speed override is set to 50%. What advantage does this provide to the operator?

- A. It sets the feed rate for roughing operation
- B. It automatically finishes the part up to final length
- C. It selects the correct tool set for the job
- D. It allows safer observation during trial cutting ✓

Q59 Part B (Machinist)

While calculating plate cam motion, which parameter is essential for determining the displacement of the follower at any given cam rotation angle?

- A. The spindle rotation on which the cam is attached
- B. The distance from the camshaft center to the cam profile at a specific angle ✓
- C. The material used to manufacture the plate cam
- D. The hardness of the tip of the follower used in the cam mechanism

Q60 Part B (Machinist)

A machinist is grinding a 200 mm long shaft with a feed of 2 mm per revolution at a speed of 40 revolutions per minute. What is the machining time required for one pass?

- A. 4.0 minutes
- B. 2.5 minutes ✓
- C. 1.0 minute
- D. 3.5 minutes

Q61 Part B (Machinist)

In a three-wire method of thread measurement, wires are selected based on the thread pitch. What may result from using wires larger than the calculated size?

- A. The wires will provide a tighter fit and better results
- B. The measurement will be more accurate due to increased contact area
- C. The wires will not fit properly, leading to inaccurate measurement ✓
- D. The wires will measure the root diameter instead of the pitch diameter

Q62 Part B (Machinist)

Which of the following best defines 'downtime' in manufacturing?

- A. A period during which routine maintenance is performed
- B. A period during which machines are not in production ✓
- C. A period during which machines achieve maximum output
- D. A period during which operators take scheduled breaks

Q63 Part B (Machinist)

Which application is most suitable for a triangular file?

- A. Cutting threads
- B. Boring holes
- C. Polishing flat surfaces
- D. Sharpening saw teeth ✓

Q64 Part B (Machinist)

A machine has an original cost of 100,000, scrap value of 10,000, and total working hours of 10,000. What is its hourly depreciation?

- A. 11
- B. 12
- C. 10
- D. 9 ✓



Q65 Part B (Machinist)

Which condition would most likely cause uneven lubrication in a splash lubrication system?

- A. Improper alignment of the ring oiler with the oil level** ✓
- B. Maintaining correct shaft rotation for oil distribution
- C. Using clean oil in the reservoir for lubrication system
- D. Maintaining proper oil viscosity for smooth circulation

Q66 Part B (Machinist)

Which file is best suited for filing internal corners?

- A. Flat file
- B. Triangular file** ✓
- C. Square file
- D. Round file

Q67 Part B (Machinist)

A force of 10 newtons moves an object 2 metres. How much work is done?

- A. 8 joules
- B. 5 joules
- C. 12 joules
- D. 20 joules** ✓

Q68 Part B (Machinist)

When comparing piloted counterbore and countersink tools, which statement is correct?

- A. Piloted counterbores create flat-bottomed holes, while countersinks create conical holes.** ✓
- B. Both piloted counterbores and countersinks create only tapered holes.
- C. Both piloted counterbores and countersinks create only through-holes.
- D. Piloted counterbores create conical holes, while countersinks create flat-bottomed holes.

Q69 Part B (Machinist)

The pilot diameter in a piloted counterbore is designed to match which feature?

- A. The diameter of the existing hole** ✓
- B. The diameter of the fastener head
- C. The length of the counterbore
- D. The shank diameter

Q70 Part B (Machinist)

What is the primary purpose of entering workpiece offset data in the CNC VMC console during setup?

- A. To define the position of the workpiece origin for machining process** ✓
- B. To calibrate the coolant flow rate during machining process
- C. To set the tool length value for the current tool for machining process
- D. To adjust the spindle speed for the operation of the machining process

Q71 Part B (Machinist)

Why is interchangeability important in mass production according to Bureau of Indian Standards (BIS) guidelines?

- A. It ensures all parts are made from identical materials
- B. It allows replacement of parts without custom adjustments** ✓
- C. It ensures all parts are made with zero tolerances
- D. It guarantees zero defects in every manufactured part

Q72 Part B (Machinist)

During a CNC lathe roughing operation, excessive tool wear and uneven stock removal are observed. Which adjustment will help to improve machining consistency and tool life?

- A. Adjusting feed and depth during cutting** ✓
- B. Increasing spindle speed during cutting
- C. Changing tool nose radius for a sharper edge
- D. Applying coolant flow during operation

Q73 Part B (Machinist)

A machinist attempts to adjust the vertical height of a table by using saddle in a milling machine. What mistake is being made?

- A. Saddle does not provide vertical movement** ✓
- B. Saddle controls spindle speed
- C. Saddle is fixed to column
- D. Saddle does not support worktable



Q74 Part B (Machinist)

Which of the following is the primary function of lubricants in grinding operations?

- A. To increase rotational speed of grinding wheel
- B. To supply the extra coolant to the workpiece
- C. To remove metallic chips from the work area
- D. To reduce friction between tool and workpiece ☒

Q75 Part B (Machinist)

What is the main purpose of a color code in the context of lubrication management?

- A. To identify lubricants and match them with application points ☒
- B. To combine different lubricants for improved machine operation
- C. To measure lubricant viscosity and performance characteristics
- D. To classify equipment according to maintenance schedules



Part B (Machinist)

75 Questions • Answer Key

Q1 Part B (Machinist)

In the tailstock offset method for taper turning, what is the primary function of the tailstock?

A. To set the alignment for creating a taper



B. To support threading operations

C. To adjust spindle speed during operation

D. To set tool feed direction

Q2 Part B (Machinist)

If a flash fire occurs during hot work, what should be the worker's IMMEDIATE response?

A. Trying to hide the incident temporarily to avoid interrupting ongoing workshop operations

B. Activating the nearest fire alarm and evacuating the area according to emergency procedures



C. Attempting to extinguish the flash fire alone before informing nearby workers or supervisors

D. Completing the current hot work activity before taking action against the fire emergency

Q3 Part B (Machinist)

If the volume of a cube is 3375 cm^3 , what is the length of one side?

A. 12 cm

B. 20 cm

C. 18 cm

D. 15 cm



Q4 Part B (Machinist)

Which application is best suited for carbide drills?

A. Manual metal bending

B. Finishing internal surfaces of plastic materials

C. High-speed machining of tough materials



D. Drilling wood objects only

Q5 Part B (Machinist)

Which lighting is commonly used in workshops for safe movement during a power failure?

A. Task lighting

B. Decorative lighting

C. Emergency lighting



D. Ambient lighting

Q6 Part B (Machinist)

A machinist is experiencing periodic marks on the surface of a workpiece during cylindrical grinding. After checking for machine looseness and wheel balance, which adjustment should be prioritized to eliminate chatter if the marks persist?

A. Increase the rigidity of the workpiece support



B. Increase the grinding wheel speed

C. Decrease the feed rate of the grinding wheel

D. Switch to a softer grade grinding wheel

Q7 Part B (Machinist)

Why does BIS tolerance notation specify hole designation before shaft designation in fits?

A. To represent the actual size obtained after machining

B. To specify the tolerance magnitude of shaft before hole

C. To identify the inspection sequence during measurement

D. To indicate the hole basis or shaft basis relationship used for the fit



Q8 Part B (Machinist)

In an open-loop CNC control system, what happens if there is a load disturbance during machining?

A. The system slows down to adjust the error

B. The system sends an alarm to the operator to stop

C. The system automatically compensates the disturbance

D. The system cannot detect or correct the error



Q9 Part B (Machinist)

A student claims that a V-block can be used for holding flat jobs as effectively as round jobs. Why is this statement incorrect?

- A. Flat jobs are too heavy
- B. V-blocks damage flat jobs
- C. Flat jobs lack surface contact in the V-block ✓
- D. V-blocks are only made for large jobs

Q10 Part B (Machinist)

A machinist wants to divide a workpiece into 8 equal parts using direct indexing. How many holes should be moved between each division on a 24-hole plate?

- A. Move 4 holes each time
- B. Move 2 holes each time
- C. Move 6 holes each time
- D. Move 3 holes each time ✓

Q11 Part B (Machinist)

Which of the following is NOT usually a cause of machine downtime?

- A. Continuous production run ✓
- B. Equipment failure
- C. Power supply interruption
- D. Scheduled maintenance

Q12 Part B (Machinist)

A steel plate has a mass of 8.516 kg. If its volume is 1089 cm³, what is the density in gm/cm³?

- A. 8.00
- B. 8.50
- C. 7.25
- D. 7.82 ✓

Q13 Part B (Machinist)

A heat treatment process is required to maximize the shock resistance of a tool used for impact operations. Which process should be applied to achieve the required property enhancement?

- A. Quenching without tempering
- B. Tempering after quenching ✓
- C. Full annealing at high temperature
- D. Normalizing to refine grain structure

Q14 Part B (Machinist)

Which of the following is a multipoint cutting tool?

- A. Lathe tool
- B. Milling cutter ✓
- C. Boring bar
- D. Parting tool

Q15 Part B (Machinist)

A trainee accidentally activates the automatic tool changer while a hand is near the turret. What is the safest immediate action using panel controls?

- A. Decrease the axis movement speed using the override dial
- B. Press the cycle pause button to hold program execution
- C. Activate the emergency stop to instantly cut machine movement ✓
- D. Switch to manual mode on the panel controls

Q16 Part B (Machinist)

Which type of drilling machines is specifically designed to accommodate multiple spindles so that different drilling operations can be performed at the same time?

- A. Bench drilling machine
- B. Gang drilling machine ✓
- C. Radial drilling machine
- D. Upright drilling machine

Q17 Part B (Machinist)

Why should a reamer never be rotated backwards during removal from a hole?

- A. It will improve the surface finish
- B. It prevents chip removal
- C. It damages the cutting edges and accuracy ✓
- D. It reduces tool temperature

Q18 Part B (Machinist)

Which part of the lathe is mounted on the left end of the bed?

- A. Tool post
- B. Tailstock
- C. Carriage
- D. Headstock ✓



Q19 Part B (Machinist)

When setting up for a heavy milling operation, why is it important to ensure that the overarm and ram are securely locked in position?

- A. Extends table travel distance
- B. Prevents unwanted movement during cutting ✓
- C. Improves coolant flow rate
- D. Increases spindle rotation speed

Q20 Part B (Machinist)

Which grade of pencil is recommended for single-stroke lettering in engineering drawings?

- A. HB grade ✓
- B. 2H grade
- C. B grade
- D. F grade

Q21 Part B (Machinist)

Tools are required to resist wear and function reliably during repetitive operations. Which property is most commonly enhanced through heat treatment to fulfill this requirement?

- A. Toughness
- B. Elasticity
- C. Machinability
- D. Wear resistance ✓

Q22 Part B (Machinist)

Which type of encoders is most commonly used in CNC VMC machines for precise position measurement?

- A. Optical sensor
- B. Linear encoder
- C. Limit switch
- D. Rotary encoder ✓

Q23 Part B (Machinist)

During a straddle milling operation, chatter marks are observed on both parallel surfaces after machining. Which adjustment would most likely reduce this defect?

- A. Using a coarser feed rate
- B. Raising the spindle speed substantially
- C. Increasing the table feed significantly
- D. Reducing the cutter overhang on the arbor ✓

Q24 Part B (Machinist)

Which statement correctly explains the purpose of setting a work offset in CNC VMC programming?

- A. A work offset modifies the tool length during program setup in CNC VMC for accurate machining.
- B. A work offset changes the home position of the CNC machine for each tool used for accurate machining.
- C. A work offset establishes the relationship between the machine zero and the part zero for accurate machining. ✓
- D. A work offset is used exclusively during tool change operations in CNC VMC for accurate machining.

Q25 Part B (Machinist)

Which fluid is typically used to improve aluminum machining on a lathe machine?

- A. Soluble oil-based coolant ✓
- B. Synthetic cutting fluid
- C. Kerosene without additives
- D. Pure water as a coolant

Q26 Part B (Machinist)

A mechanic observes rust spots on a file despite storage. What maintenance step was likely skipped?

- A. Application of light oil before storage ✓
- B. Sharpening the file teeth
- C. Use of a plastic handle
- D. Polishing with emery cloth

Q27 Part B (Machinist)

If the contact surfaces of a V-block become worn, the most appropriate action is to:

- A. Increase clamping force
- B. Replace or recondition the V-block ✓
- C. Paint the surface
- D. Ignore the wear

Q28 Part B (Machinist)

When using the reciprocating table method, what is the primary movement of the surface grinder table relative to the grinding wheel?

- A. Rotary circular motion
- B. Side-to-side linear motion
- C. Up-and-down vertical motion
- D. Back-and-forth linear motion ✓



Q29 Part B (Machinist)

What does the term 'machine hour rate' refer to in costing?

- A. The factory overhead cost incurred per machine hour ✓
- B. The total operating profit earned per machine day
- C. The total machine-related cost allocated for one year
- D. The total machine-generated revenue earned per shift

Q30 Part B (Machinist)

In a puncher type slotter, what is the primary movement of the cutting tool?

- A. Reciprocating vertically ✓
- B. Moving diagonally
- C. Oscillating in circles
- D. Rotating horizontally

Q31 Part B (Machinist)

When a taper turning attachment is used instead of swiveling the compound rest, what machining capability is significantly enhanced?

- A. It allows for cutting threads on the workpiece
- B. It reduces the hardness of the workpiece material
- C. It makes the tool holder lighter for easier handling
- D. It enables the production of long tapers accurately ✓

Q32 Part B (Machinist)

Which method of cylindrical grinding is used when the workpiece is supported between centers and rotated?

- A. Infeed center-less method
- B. Through feed grinding method
- C. End feed grinding method
- D. Traverse grinding method ✓

Q33 Part B (Machinist)

Given a 10 mm twist drill and a recommended feed of 0.15 mm/rev, what is the total feed after 20 revolutions?

- A. 0.75 millimeters
- B. 1.50 millimeters
- C. 3.00 millimeters ✓
- D. 2.00 millimeters

Q34 Part B (Machinist)

Which scenario requires the use of multiple auxiliary views in orthographic projection?

- A. An object with all surfaces parallel to principal planes.
- B. A part with several surfaces inclined at different angles. ✓
- C. A rectangular block with entirely flat and straight faces.
- D. A cylinder with its axis perpendicular to all planes.

Q35 Part B (Machinist)

Which unsafe practice can lead to electrical accidents in a workshop?

- A. Using dry hands when operating switches
- B. Checking voltage before equipment use
- C. Wearing safety shoes during work
- D. Bypassing safety interlocks on machines ✓

Q36 Part B (Machinist)

Which PPE is appropriate for protecting against electrical hazards in a workshop?

- A. Cotton gloves
- B. Latex gloves
- C. Leather gloves
- D. Insulated gloves ✓

Q37 Part B (Machinist)

Where must the title block be located on an engineering drawing sheet according to the prescribed standard?

- A. Bottom left-hand corner
- B. Top right-hand corner
- C. Top left-hand corner
- D. Bottom right-hand corner ✓

Q38 Part B (Machinist)

In a CNC turning center, the operator finds that sharp corners in the programmed part are automatically blended with a small radius. Which tool compensation setting should be checked to restore sharp corners?

- A. Spindle power setting during finishing
- B. Tool change position in the turret
- C. Tool radius offset value for the current tool ✓
- D. Coolant pressure adjustment during cutting



Q39 Part B (Machinist)

While operating a CNC lathe, an unexpected tool movement causes the tool to contact the chuck. What type of machine damage is most likely to occur from this collision?

- A. Spindle bearing failure
- B. Chuck jaw deformation** ✓
- C. Bed misalignment
- D. Coolant leakage

Q40 Part B (Machinist)

How does the pitch (number of teeth per inch) of a hacksaw blade affect its cutting ability?

- A. Pitch material only affects blade lifespan
- B. Pitch only affects heat generation during cutting
- C. Coarser pitch is better for all materials
- D. Finer pitch produces smoother cuts** ✓

Q41 Part B (Machinist)

While operating a CNC lathe, an unexpected tool movement causes the tool to contact the chuck. Which type of machine damage is most likely to occur from this collision?

- A. Tool magazine jamming during tool change
- B. Unstable spindle speed during cycles
- C. CNC controller software errors
- D. Turret misalignment or damage** ✓

Q42 Part B (Machinist)

Why is a feedback device such as an encoder important in the closed-loop control of CNC VMC machines?

- A. It operates independently without any feedback from the machine to adjust its speed.
- B. It sets the initial speed of the spindle but does not monitor its position.
- C. It allows the controller to correct errors in tool movement during machining.** ✓
- D. It displays the position information on the screen for the operator for information.

Q43 Part B (Machinist)

Which term refers to the number of teeth per inch on a file?

- A. Shape
- B. Cut** ✓
- C. Pitch
- D. Length

Q44 Part B (Machinist)

Which tool is most commonly used for cutting keyways on a slotting machine?

- A. Formed tool type
- B. Round nose tool
- C. Diamond point tool
- D. Single point tool** ✓

Q45 Part B (Machinist)

Which feature distinguishes a helix from a simple spiral?

- A. A helix always starts at a single point, while a spiral does not.
- B. A helix extends in three dimensions around an axis, while a spiral lies flat in one plane.** ✓
- C. A helix forms a closed loop, while a spiral always remains open-ended.
- D. A helix and a spiral both lie in a single plane but differ in size.

Q46 Part B (Machinist)

When producing a plate cam, why is it necessary to use a template or pattern during manufacturing?

- A. It ensures that the heat treatment process does not lead to warping
- B. It increases the hardness of the material used in cam manufacturing
- C. It ensures the cam profile is accurately reproduced to the required profile** ✓
- D. It speeds up the process and ensures the correct setup for milling

Q47 Part B (Machinist)

A machinist selects tempering as the next step after hardening a steel component. Which property is most likely to improve as a result of tempering in this heat treatment process?

- A. Strength decreases with finer grain structure
- B. Hardness increases with reduced ductility
- C. Toughness increases while brittleness decreases** ✓
- D. Grain size increases with no change in ductility



Q48 Part B (Machinist)

During a cylindrical grinding operation, an operator observes closely spaced, repetitive marks on the surface of the workpiece. Which of the following is most likely responsible for the formation of these chatter marks?

- A. Incorrect work speed causing burns
- B. Loose spindle bearings causing vibration ✓
- C. Wheel loading resulting in glazing
- D. Excessive coolant flow on the wheel

Q49 Part B (Machinist)

Which property of the coolant fluid is most critical to ensure both effective cooling and lubrication during vertical milling operations?

- A. The coolant must have high electrical conductivity for machine safety.
- B. The coolant must be brightly colored for easy visibility while machining.
- C. The coolant must have suitable viscosity and thermal conductivity for machining. ✓
- D. The coolant must be able to produce foam to protect the workpiece from chips.

Q50 Part B (Machinist)

During a milling operation, what aspect of the spindle ensures accurate machining and surface finish on the workpiece?

- A. Increasing spindle speed beyond recommended levels
- B. Using a heavy-duty spindle for large cutters
- C. Only using lubricated spindle bearings
- D. Proper alignment and minimal runout of the spindle ✓

Q51 Part B (Machinist)

A production line experiences repeated delays due to waiting for maintenance staff to fix machines. As a machinist, what process change would best minimize down time in this scenario?

- A. Increasing the number of maintenance staff on call
- B. Training operators to perform routine maintenance tasks ✓
- C. Extending machine warranty agreements for repairs
- D. Rescheduling shifts to match maintenance staff availability

Q52 Part B (Machinist)

Which part(s) of the milling cutter is/are primarily used for cutting in face milling operations?

- A. Arbor shaft face
- B. Machine spindle body
- C. Cutter face edges ✓
- D. Cutter side edges

Q53 Part B (Machinist)

A machinist wants to create a gear with 20 teeth using simple indexing. Which setting should be used on a standard 40:1 dividing head?

- A. Two full rotations ✓
- B. Five full rotations
- C. Four full rotations
- D. Ten full rotations

Q54 Part B (Machinist)

Which part of a cylindrical grinder holds and rotates the workpiece during the grinding operation?

- A. Tailstock
- B. Grinding wheel
- C. Carriage
- D. Headstock ✓

Q55 Part B (Machinist)

How does natural deterioration of component affect production?

- A. It eliminates maintenance requirements for equipment
- B. It improves production speed and operating efficiency
- C. It reduces equipment downtime during production activities
- D. It leads to more production interruptions and stoppages ✓

Q56 Part B (Machinist)

Which operation would most benefit from using a half round file over a square file?

- A. Shaping a hexagonal hole
- B. Leveling a flat surface
- C. Blending a curved groove ✓
- D. Making a sharp corner



Q57 Part B (Machinist)

When does a parallelogram become a rectangle?

- A. When the two adjacent sides become equal in length.
- B. When the two diagonal lines become perpendicular.
- C. When all four boundary sides become unequal in length.
- D. When all four internal angles become right angles. ✓

Q58 Part B (Machinist)

If a bench vice shows uneven clamping pressure, which maintenance step should be performed first?

- A. Increase the lubrication amount
- B. Replace the entire vice
- C. Reduce the handle length
- D. Check jaw alignment and tighten mounting bolts ✓

Q59 Part B (Machinist)

A machine with a power rating of 2 kW operates continuously for 5 hours. What is the total electrical energy consumed by the machine during this period?

- A. 0.4 kWh
- B. 10 kWh ✓
- C. 7 kWh
- D. 2.5 kWh

Q60 Part B (Machinist)

In a milling operation, the actual cycle time is consistently higher than the estimated cycle time. Which factor is most likely causing this discrepancy if all other parameters remain constant?

- A. Machine speed is always constant
- B. Material properties remain the same during operation
- C. Operator skill is unchanged
- D. Frequent tool changes are causing delays ✓

Q61 Part B (Machinist)

Which material is least likely to be affected by rapid temperature changes during cutting?

- A. Ceramic tool material
- B. High-speed steel (HSS) ✓
- C. Cast alloy steel
- D. Carbon tool steel

Q62 Part B (Machinist)

During preventive maintenance, unusual wear is observed on the gripping arms of the ATC in a CNC VMC. Which operational issue is most likely to occur if this wear is not addressed promptly?

- A. ATC may not recognize the correct tool number
- B. Coolant may not be delivered during tool changes
- C. Incorrect spindle speed may be selected during tool change
- D. Tools may be dropped or not securely loaded into the spindle ✓

Q63 Part B (Machinist)

The main factor influencing a lathe's firmness under load is:

- A. Spindle bore diameter
- B. Spindle speed range
- C. Bed width and design ✓
- D. Swing over bed

Q64 Part B (Machinist)

During CNC VMC milling, an operator must program the machine to activate coolant flow before starting the spindle for a heat-sensitive operation. Which ISO M code should be programmed before spindle start to ensure coolant is delivered to the cutting zone?

- A. M08 ✓
- B. M09
- C. M05
- D. M03

Q65 Part B (Machinist)

A machinist observes that the spindle motor of a CNC lathe is overheating after prolonged use. Which aspect of the spindle drive system should be primarily checked to address this issue?

- A. Drive belt alignment
- B. Lubrication system condition
- C. Electrical wiring insulation
- D. Cooling mechanism efficiency ✓



Q66 Part B (Machinist)

If a machinist must grind a non-ferrous metal, which grinding wheel would be most appropriate to use?

- A. Cubic boron nitride wheel is best for non-ferrous metals
- B. Silicon carbide wheel is suitable for non-ferrous metals ✓
- C. Aluminum oxide wheel is ideal for non-ferrous metals
- D. Diamond wheel is used for non-ferrous metals

Q67 Part B (Machinist)

After resolving an axis over-travel on a CNC lathe, which action should be performed before resuming the program?

- A. Ignore the zero return process and continue machining
- B. Change the workpiece and start a new setup
- C. Restart the program immediately from where it stopped
- D. Verify axis position and reference zero return if needed ✓

Q68 Part B (Machinist)

A machinist is required to finish a hole in a hard alloy component. Which reamer material should be selected?

- A. Copper
- B. Carbide ✓
- C. Brass
- D. Mild Steel

Q69 Part B (Machinist)

A 1:40 taper is to be turned using the compound rest. If the workpiece is 200 mm long, what is the approximate compound rest angle required?

- A. 1.15 degrees
- B. 0.36 degrees
- C. 0.72 degrees ✓
- D. 1.43 degrees

Q70 Part B (Machinist)

What is the main function of the spindle in a bench vice?

- A. To increase friction on the workpiece
- B. To protect the jaws
- C. To convert rotary motion into linear motion ✓
- D. To support the base

Q71 Part B (Machinist)

When changing from a shorter to a longer tool on a CNC lathe, which adjustment must be made to maintain machining accuracy?

- A. Update the work table offset value
- B. Select a different part program
- C. Update the tool length offset value ✓
- D. Adjust the spindle feed rate

Q72 Part B (Machinist)

How much is 1 calorie in joules?

- A. 2.500 joules
- B. 4.186 joules ✓
- C. 1.000 joules
- D. 10.000 joules

Q73 Part B (Machinist)

In a scenario where a CNC vertical machining center is required to maintain extremely tight tolerances over an extended production run, which closed-loop control component is directly responsible for identifying and reporting deviations from the programmed tool path?

- A. Spindle motor drive
- B. Position feedback transducer ✓
- C. Power supply module
- D. Coolant distribution unit

Q74 Part B (Machinist)

Why should regular inspections be performed on equipment?

- A. To identify potential problems before major failures occur ✓
- B. To reduce maintenance records and documentation efforts
- C. To increase machine output and production efficiency
- D. To complete routine inspection checklists within schedule

Q75 Part B (Machinist)

When interpreting a job drawing, how can you distinguish a split pin from a solid pin based on conventional representation?

- A. A split pin appears as a circle with center dot
- B. A split pin shows two legs with a visible gap ✓
- C. A split pin uses crossing lines in the drawing
- D. A split pin uses zigzag lines for representation

