TEAM UP ACADEMY
CNC Certification Study Guide & Mock Interview Prep

1. Blueprint Reading

Question: How do you read and interpret a blueprint accurately?

Answer Example: Start by identifying the title block for part name, scale, and material. Read all dimensions and tolerances. Recognize datums (A, B, C) and interpret GD&T; symbols. Always visualize how each view connects (top, front, right). Pay attention to notes for hole types, finishes, and thread callouts.

2. Squaring a Block

Question: What are the steps to square up a block with precision?

Answer Example: Secure raw stock in a vise, face one surface flat, then rotate 90° to face the next side perpendicular. Continue until all six sides are parallel and perpendicular. Check squareness using a dial indicator or machinist's square.

3. Tool Touch-Off

Question: How do you properly touch off tools?

Answer Example: Load the tool into the spindle, jog to a reference surface, and slowly lower until the tool just touches off (use paper or tool setter). Record the Z position and set the tool length offset in the tool table. Repeat for all tools.

4. Work Offsets

Question: How do you pick up and set machine offsets?

Answer Example: Use an edge finder or probe to locate part zero. For example, touch off the left X face, subtract the edge finder radius, and set G54 X0. Repeat for Y and Z using a known surface. Confirm by dry running the program at safe height.

5. Inspection Tools

Question: How do you inspect parts using calipers, height gauges, and micrometers?

Answer Example: Use calipers for general dimensions (±.002"), micrometers for tighter tolerances (±.0001"), and height gauges on a surface plate for vertical measurements. Always zero and clean tools before use.

6. Math, Geometry & Trig

Question: How do you apply math and trigonometry in machining?

Answer Example: Use right triangle formulas (SOH-CAH-TOA) to find angles or offsets. Example: if you know the opposite and adjacent sides, use $\tan^{-1}$(opposite/adjacent) for angle. Apply feed/speed

formulas and convert units as needed.

7. Materials & Tooling

Question: How do you select feeds, speeds, and tooling for different materials?

Answer Example: Aluminum: high RPM, high feed, sharp carbide tool. Steel: moderate RPM, lower feed, coated carbide or HSS. Stainless: low RPM, slow feed, coolant required. Adjust based on rigidity, depth of cut, and tool type.

8. Machine & Shop Cleanliness

Question: What's required to keep machines and work areas clean?

Answer Example: Wipe down machine after each use, clear chips, empty coolant tray if needed, and store tools properly. Maintain oil and coolant levels. A clean work area prevents accidents and part contamination.

9. Tolerances & Finishes

Question: How do you ensure tolerances and finishes meet specifications?

Answer Example: Inspect parts regularly during machining. Use finishing passes, sharp tools, and proper speeds/feeds. Avoid tool wear and vibration. Verify dimensions with calibrated instruments before final sign-off.

10. Safety Practices

Question: What are the most important CNC safety rules?

Answer Example: Always wear safety glasses and proper footwear. Never reach into a running machine. Verify setup before pressing cycle start. Secure workpieces, remove chuck keys, and avoid loose clothing or jewelry.

Quick Review Checklist

■ Explain each concept clearly in your own words.
■ Demonstrate measuring, setup, and offset skills.
■ Describe a safe, clean, and professional workspace.
■ Use math confidently in setup or inspection questions.
■ Relate your answers to real-world shop situations.