State Qualifying Exam Preparation Guide

CNC Turning Specialist (CNCT)

Exams developed in partnership with Cengage Learning.

Book Information

Precision Machining Technology

Author: Peter J. Hoffman; Eric S. Hopewell; Brian Janes
2nd Edition
©2015 Published

Exam Topics

I. SECTION I: INTRODUCTION TO MACHINING.
   - Introduction to Machining.
   - Careers in Machining.
   - Workplace Skills.

II. MEASUREMENT, MATERIALS, AND SAFETY.
   - Introduction to Safety.
   - Semi-Precision Measurement.
   - Precision Measurement.
   - Quality Assurance, Process Planning, and Quality Control.
   - Metal Composition and Classification.
   - Heat Treatment of Metals.
   - Maintenance, Lubrication, and Cutting Fluid Overview.

III. JOB PLANNING, BENCHWORK, AND LAYOUT.
   - Understanding Drawings.
   - Layout.
   - Hand Tools (Safety Integration).
   - Saws and Cut-Off Machine.
   - Offhand Grinding.
   - Drilling, Treading, Tapping and Reaming.
IV. TURNING.
- The Lathe.
- Work and Tool Holding Devices.
- Machining Operations on the Lathe.
- Threading.
- Taper Turning.

V. DRILL PRESS.
- Sizes and Types of Drill Presses.
- Drills, Reamers, Countersinks and Counterbores.
- Work Holding Devices.
- Drill Press Operation.

VI. MILLING.
- Major Parts.
- Vertical Milling Machine Cutter.
- Work Holding Devices.
- Drills and Drilling.
- Squaring a Work Piece on the Milling Machine.
- Milling Slots and Key Ways.
- Pocket Milling.
- Milling Angels, Radii and Diameters.

VII. GRINDING.
- Surface Grinders and Grinding Wheels.
- Grinding Wheels.

VIII. COMPUTER NUMERICAL CONTROL.
- CNC Basics.
- CNC Turning: Getting Started.
- CNC Turning: Programming.
- CNC Turning: Set-up and Operation.
- CNC Milling: Getting Started.
- CNC Milling: Programming.
- CNC Milling: Set-up and Operation.
- Computer Aided Design and Computer Aided Machining.

Sample Questions
1. Engineering drawings are _____-dimensional representations of three-dimensional parts and contain many important facts about types of materials to be used.
   a. one
   b. two
   c. three
   d. four
2. A straight edge is a bar with ________ edge(s) that is extremely flat and are available in steel or granite.
   a. one
   b. two
   c. three
   d. four

3. The ________ shows the amount of variation of each sampling.
   a. R-chart
   b. X-chart
   c. Y-bar
   d. R-bar

4. A more accurate measurement of Ra surface roughness can be obtained with a ________.
   a. profilometer
   b. caliper
   c. solid square
   d. vernier caliper

5. SPC plots data on ________ charts to analyze trends in part variation.
   a. range
   b. ring
   c. variation
   d. control

6. Steels that have other elements added to them are called ________.
   a. tool steels
   b. alloy steels
   c. superalloys
   d. aluminum alloys

7. Aluminum alloys are usually identified by ________ or IADS numbers.
   a. UNS
   b. ANMA
   c. AL
   d. AA

8. Precipitation heat treatment is performed by heating aluminum alloys to around ________ to artificially speed up the aging process.
   a. 200°F
   b. 300°F
   c. 500°F
   d. 900°F
9. Some machining applications use a ______ to cool the tool and workpiece wherein no lubrication is provided, only cooling.
   a. cold air gun
   b. mist system
   c. refractometer
   d. ball oiler

10. ______ milling is using the outside periphery of the cutting tool to machine a surface.
   a. Face
   b. Peripheral
   c. Climb
   d. Conventional