Exam Topics

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

II. MEASUREMENT, MATERIALS, AND SAFETY.
   • Introduction to Safety.
   • Measurement Systems and Machine Tool Math Overview.
   • 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. As the machining industry grew through the ____ century, the term machinist replaced mechanic.
   a. 18th
   b. 19th
   c. 20th
   d. 21st
2. __________ do not usually perform machining operations.
   a. Machinists
   b. Operators
   c. Mechanics
   d. Supervisors

3. ______ screwdrivers have a broad, flat tip and are made in many sizes to fit the width and thickness of the screw slot.
   a. Offset
   b. Phillips
   c. Torx
   d. Straight

4. The top of the lathe bed contains precision-ground flat and v-shaped rails known as the ________.
   a. ways
   b. swing
   c. gib
   d. rod

5. ______ are useful for holding parts square and steady during layout operations.
   a. Surface plates
   b. Rule holders
   c. Surface gages
   d. Angle plates

6. When a machine is programmed _____, all X coordinates are expressed as diameters.
   a. linearly
   b. diametrically
   c. radially
   d. algebraically

7. The ____ flange holders have a thicker flange with an off-center groove.
   a. DA
   b. BT
   c. CAT
   d. TG

8. The very first step in using CAM software is to make a drawing with ________ software.
   a. toolpath
   b. CAM
   c. CAD
   d. surface model
9. A(n) ______ has teeth set in a pattern in which every other tooth switches the side of the blade it is set to.
   a. alternate set
   b. raker set
   c. wavy set
   d. gullet set

10. Tapers can be specified on prints by ______ basic methods.
    a. two
    b. three
    c. four
    d. five