

Study Guide for NIMS Test #1

(Measurement, Materials and Safety)

Safety:

1. The safest way to remove chips from a lathe or milling machine -BRUSH
2. The most common injury from using a hand file- BEING STABBED BY THE TANG (FILE WITHOUT A HANDLE)
3. MSDS stands for –MATERIAL SAFETY DATA SHEET- See Page 707
4. Hazardous Material Labeling- see page 53- 57
 - a. NFPA- stands for National Fire Protection Association
 - b. HMIS- stands for HAZARDOUS MATERIAL IDENTIFICATION SYSTEM or HAZARDOUS MATERIAL INFORMATION SYSTEM
5. Which of the following colors is not found on a HMIS Label? Green, Blue Yellow or Red? GREEN see page
6. Define the threshold limit value (TLV) found on MSDS sheets- THE SAFE LIMIT OF UNPROTECTED EXPOSURE TO A MATERIAL
7. MSDS information on new chemicals and materials found in the workplace can be reviewed and discussed at: RIGHT TO KNOW SEMINARS AND CLASSES, AND SAFETY MEETINGS
8. The acronym for the government agency that regulates safety is: OSHA
9. Why are shop towels or oily rags stored in a red fireproof can with a lid?
PREVENT FIRE THROUGH SPONTANEOUS COMBUSTION
10. What is the first course of action for when a material (solid) becomes lodged in the eye? PULL THE TOP LID OVER THE BOTTOM LID
11. The first action to take with a bleeding wound : STOP THE BLEEDING BY APPLYING PRESSURE TO THE WOUND
12. The best technique for lifting: LIFT WITH THE LEGS AND KEEP THE BACK STRAIGHT
13. When operating a lathe, long hair, dangling jewelry, or loose clothes can: BECOME CAUGHT IN THE LATHE PULLING THE OPERATOR TOWARD THE MACHINE

14. When working on material stored overhead using cranes or hoists, government safety regulations state that a person must: WEAR A HARD HAT
15. When working on machinery producing flying chips, the most important Personal protection equipment a machinist must wear is: SAFETY GLASSES
16. When operating a milling machine: ADJUST THE WORK ONLY WHEN THE CUTTER IS STOPPED
17. The best technique for milling on a vertical mill that is not equipped with an automatic table is to: CONVENTIONAL MILL

Machine Maintenance procedures:

1. Small chips left on the spindle nose of a lathe should be cleaned to avoid: RUN OUT ON WORK HOLDING DEVICES such as a 3 jaw chuck 2. Grease guns are used to insert grease into: ZERK FITTINGS ON MACHINE TOOLS
3. Best way to lubricate the ways of a lathe, the gibs of a mill, or the cross slide of a surface grinder: USE LUBRICANT FOUND IN A CENTRAL LUBRICATING SYSTEM- ("ONE SHOTS")
4. If a vertical mill table is loose and has side play, the best solution to alleviate side play is to: TIGHTEN THE TAPER GIB ADJUSTMENT
5. If a machinist wants to find the proper type of lubrication, schedule and recommended maintenance practices for the headstock of a lathe: LOOK AT THE PREVENTIVE MAINTENANCE SCHEDULE AND MACHINE MANUAL
6. For general maintenance information for machine tools and the machine work area: LOOK IN THE GENERAL MAINTENANCE MANUAL

Hand Tool Maintenance:

1. Define Pinning: LOADING A HAND FILE WITH METAL CHIPS
2. How should files be stored? IN A TOOLBOX SEPARATED FROM EACH OTHER
3. What is the best way to clean chips out of a file? USE A FILE CARD

Measurement, Inspection and Quality Control:

1. Inspection plans are needed to:
 - a. COORDINATE INSPECTION PROCEDURES
 - b. IDENTIFY MEASURING TOOLS
 - c. CHECK DIMENSIONS IN A REPEATABLE AND RELIABLE WAY
2. The first thing to do when constructing an inspection plan: SELECT THE CRITICAL AND IMPORTANT DIMENSIONS TO INSPECT
3. The most important factor in selecting measuring tools for inspection is: TOLERANCING OF DIMENSIONS TO INSPECT
4. A part is considered a reject when: DIMENSIONS ARE OUT OF TOLERANCE
5. A sampling is referred to as: SAMPLES TAKEN FROM A MACHINE OVER A PERIOD OF TIME
6. Sampling plans contribute to a quality control process by: PROVIDING AN ACCEPTABLE REPRESENTATION OF ALL THE PARTS PRODUCED
7. What feature of a thread is checked with a thread micrometer? PITCH DIAMETER
8. Dial bore gages are used to measure: HOLES
9. To indicate an angled surface and make that surface parallel to a surface plate, the machinist would use a: SINE PLATE
10. What is the gage block height for an angle of 9 degrees on a 10 inch sine plate? 1.5643 INCHES
11. Using an 81 piece gage block set, what is the best combination of blocks to gage a length of .9528"? 0.1008, 0.102, 0.750
12. The process of displacing air between gage blocks for accurate measurements is called: WRINGING
13. To check the height of multiple parts with gage blocks, a machinist would use: DIAL INDICATOR AND DIGITAL HEIGHT GAGE

14. What sizes of gage pins would a machinist need for a dimension of $3/32 \pm 1/64$ inches for a go/no go gage set up? (round to nearest 3 places)

$$\begin{array}{rcl} 3/32 & = & .0938 \\ +1/64 & = & .0156 \\ \hline & & .1094 \\ & & (.110) \end{array} \qquad \begin{array}{rcl} & & .0938 \\ & & -.0156 \\ \hline & & .0782 \\ & & (.078) \end{array}$$

Surface Finish:

1. Surface finish is checked with: COMPARISON CHART
2. Explain the following surface finish mark: 15 THE REQUIRED SURFACE FINISH IS .015 MICRO INCHES
3. What is the most common type of surface finish callout? ROUGHNESS

SPC- Statistical Process Control:

1. A measure of dispersion that uses the largest and smallest measures of a sampling: RANGE
2. What is the range of the following sample? (.345, .382, .353, .380, .377)
ANSWER- .037
3. Which of the following is not found in an X-bar and R control chart?
 - a. MEAN
 - b. UPPER CONTROL LIMIT
 - c. LOWER CONTROL LIMIT
 - d. CAPABILITY RATIO ****

Machining Processes:

1. The best lubricant to prevent wear and increase cutting efficiency for tapping common steels: SULFUR-BASED OIL
2. The process plan specifies tooling to be used by indicating: TOOLING DIAMETERS AND SIZES
3. A reaming operation can produce finish tears. The cause of tears is: A REAMER WITH A WORN TIP

4. Tight threads produced by a tapping operation may be caused by: TAP WEAR
5. Thread percentage is dependent on the: TAP HOLE SIZE
6. What is the root cause of warping when grinding long slender pieces?
HEAT CHECKING DUE TO A HARD WHEEL
7. When dressing a grinding wheel, the diamond dresser should be located on the: OUTFEED SIDE OF THE WHEEL ROTATION (LEFT SIDE)
8. When milling, tough materials can cause accelerated tool wear. Machinists can do what to reduce tool wear and possible tool breakage?
DECREASE THE SPINDLE SPEED
9. A print calls for a $.0375 \pm .005$ wide x $0.125 \pm .005$ deep slot to be milled in a work-piece. The best procedure is to: USE A .250 DIAMETER END MILL TO A DEPTH OF .100 AND THEN USE A .375 DIAMETER END MILL AT A DEPTH OF .125 INCHES.
10. The most accurate method for aligning a vise mounted on a vertical mill table is to: USE A DIAL INDICATOR MOUNTED ON THE QUILL OR IN A COLLET
11. Reamers cutting oversize due to built up edges may be caused by:
EXCESSIVE STOCK ALLOWANCE
12. The clearance for a counter-bore pilot should be: .002- .005 INCHES
13. What is the allowance for a shaft measuring one inch in diameter with a RC6 sliding fit? (in inches) ANSWER -0.003
14. What does the acronym FN represent? FORCE FIT

Process Adjustment and Improvement:

1. Continuous improvement and teamwork: INCREASES PRODUCTION AND PROFITABILITY
2. What key items are tools for continuous improvement?
 - a. INSPECTION PLAN
 - b. PROBLEM SOLVING METHODOLOGY
 - c. SPC CHARTS