

# Engineering Materials (MSE-220)

## Assignment #1

- ..... is a physical property.
  - Gold
  - Sound
  - Corrosion
  - Hardness
  - Friction
  - Thermal conductivity
- ..... is a mechanical property.
  - Color
  - Density
  - Ferromagnetism
  - Stereospecificity
  - Stiffness
  - Strength
- Which of the following is *not* an NDT technique?
  - radiography
  - acoustic emission
  - resonant frequency
  - holography
  - tomography
  - ulasonics
- The smallest defect that an x-ray could detect in a 10 mm-thick plate is
  - 4 mm
  - 1mm
  - 0.2 mm
  - 200 nm
  - 50 nm
  - 2 nm
- The thickness limit for ultrasonic inspection is
  - 10mm
  - 100mm
  - 1m
  - 10 m
  - no technical limit
  - all of the above
- What is the most sensitive technique to use to detect internal defects in an aluminum automobile connecting rod?
  - x-ray
  - particle emission
  - magnetic particle
  - dye penetrant
  - holography
  - microscopy
- What is an element? (2-8)
  - a state of matter
  - types of metals
  - groups of molecules
  - a unique substance

8. What makes elements different from each other?
  - a. number of protons
  - b. atomic forces
  - c. electron spin
  - d. charges
  
9. Electrons
  - a. orbit the nucleus of an atom
  - b. vibrate in a described way
  - c. determine an element's reactivity
  - d. have distinct energies
  - e. all of the above
  
10. Valence electrons
  - a. are the atomic size of an element
  - b. are in the outermost orbit
  - c. have a negative spin
  - d. rotate in a circle
  
11. A substance is
  - a. a chemical
  - b. a solid
  - c. a solid, liquid, or gas
  - d. atoms of different elements
  
12. The periodic table is
  - a. glossary of elements
  - b. a categorization of the elements by chemical characteristics
  - c. a listing of valences
  - d. a tabulation of atomic charges
  
13. The density of what is about two times that of aluminum?
  - a. Fe
  - b. Li
  - c. Cu
  - d. Mg
  - e. Br
  - f. H
  
14. Which of the following is an inert gas?
  - a. Li
  - b. Ar
  - c. Cl
  - d. O
  - e. H
  - f. Ca
  
15. An alloy is
  - a. diatom
  - b. amphoteric
  - c. composed of two or more elements
  - d. molecules composed of elements
  
16. What is a metal?
17. What are dislocations and what is their role in materials?
18. How does quench hardening strengthen?
19. How does cold work strengthen?
20. What is a ceramic?
21. How are ceramics and metals strengthened?
22. What is a plastic?
23. What is a composite?