METC 143 Mid-Term Exam Review Questions

1. What is an element? Know and be able to describe what an element is and recognize general elements from a Periodic Table.

2, Know and be able to describe what an atom is. Be able to identify and describe the main components of and atoms and their functions.

3. Know and be able to describe how an element is identified on the periodic table. How is the atomic number of elements determined? What does it mean?

4. Know and be able to describe what Isotopes and Ions are.

5. Know and be able to describe what a compound. How is it formed? What units is it made of? Etc.

6. Know and be able to describe mixtures

7 Know and be able to identify the difference between solutes and solvents. How do they work?

8. Know and describe alloys. How are they formed? Be able to identify if they have the same characteristics as component elements. Etc.

9. Know and describe the chemical composition of steel. What % of steel must Iron compose?

10. Know and be able to identify and label the Steel Naming Convention

11. Know and be able to describe and identify the difference between ferrous and non-ferrous metals. Be able to identify and recognize elements that belong to each family

12. Know and identify Metallic Bonds. How do metallic bonds differ from ionic or covalent bonds? Why are these bonds helpful? Etc.

13. Know and identify the different characteristics of body-centered cubic (BCC) structure.

14. Know and identify the different characteristics of face-centered cubic (FCC) structure.

15. Know and identify the different characteristics of hexagonal close-packed (HCP) structure.

16. Know and identify the different characteristics of body centered tetragonal (BCT) structure.

17. Know and identify the different types of permanent deformation.

18. Know and be able to describe slip planes and slip bands.

19. Know and identify the different types of crystal defects.

20. Know and be able to describe grain boundaries and grain sizes.

21. Know and be able to describe the role plastic deformation has on grain boundaries.

22. Know and be able to describe what cold, warm, and hot workings are.

23. Know and be able to describe the mechanical properties of materials such as strength, hardness, ductility, toughness, and stiffness. Know how these properties are measured.

24. Understand and describe the stress-strain curve and be able to identify the different points and areas of the graph.

25. Be able to describe at what point permanent deformation begins to occur to the test specimen on the stress-strain curve.

26. Know and fully understand the different terms associated with stress-strain curves such as proportional limits, elastic limit, etc.

27. Know and be able to identify Hook's Law

28. Know and be able to identify Poisson's ratio

29. Be able to adequately use Hook's Law and Poisson's Ratio to determine stretch and lateral strain.

30. Know and understand Ductility and how to calculate % Elongation and % Reduction in Area.

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