

**MSE 426**  
**Heat Treatment of Materials**  
**(2024-2025 SPRING)**  
Assignment 1

- 1- Which one of the following matches is not true?
- ☐ Sodium (Na) : metal
  - ☐ concrete : composite
  - ☐ Titanium carbide (TiC) : ceramic
  - ☐ Epoxy : polymer
  - ☐ Calcium (Ca) : ceramic
- 2- What is microstructure?
- ☐ Structure of a material that is seen by optical microscope
  - ☐ Structure of a material that is seen by electron microscope
  - ☐ Structure that includes proton, neutron and electrons
  - ☐ Crystal structure of the atoms
  - ☐ Structure of a material that is seen by naked eye
- 3- Which one of the following materials manufacturing processes changes the microstructure?
- ☐ Hot forging
  - ☐ Extrusion
  - ☐ Wire drawing
  - ☐ Heat treatment
  - ☐ All of them
- 4- Steel is defined as Fe-C alloy containing carbon
- ☐ higher than 2.1 wt. %
  - ☐ lower than 2.1 wt. %
  - ☐ between 0.1 and 0.6 wt. %
  - ☐ between 2.1 and 4.5 wt. %
  - ☐ none of them
- 5- Which one of the following is not mechanical property?
- ☐ Hardness (H)
  - ☐ Fracture Toughness ( $K_{Ic}$ )
  - ☐ Yield Strength ( $\sigma_y$ )
  - ☐ Young Modulus (E)
  - ☐ Index of refraction (n)
- 6- Which one of the following statements is not true about polymers?
- ☐ Thermoplastics can be softened or molten and reformed into new shape by reheating
  - ☐ Thermosets cannot be softened or molten and reshaped
  - ☐ Polymers cannot be used in composite production
  - ☐ Polymers are organic compounds based on C, H and other nonmetallic elements
  - ☐ Elastomers have an elastic deformation >200%
- 7- Plain carbon steels' hardness and brittleness increases by increasing the carbon content..... **T** **F**