**Homework #6**

**MEMT 201**

1. What are the chemical phase compositions of the following alloys?

1. 15 wt% Sn – 85 wt% Pb at 100 deg. C.
   * α and β phases are present
   * Cα = 5% Sn – 95% Pb
   * Cβ = 97% Sn – 3% Pb

1. 25 wt% Pb – 75 wt% Mg at 425 deg. C.
   * Only α phase is present
   * Cα = 25% Pb – 75% Mg

1. 85 wt% Ag – 15 wt% Cu at 800 deg. C.
   * Liquid and β phases are present
   * CL = 75% Ag – 25% Cu
   * Cβ = 93% Ag – 7% Cu

1. 55 wt% Zn – 45 wt% Cu at 600 deg. C.
   * β' and γ phases are present
   * Cβ’ = 50% Zn – 50% Cu
   * Cγ = 58% Zn – 42% Cu

2. What are the weight fractions of each phase in Problem 1?

1. SnPb Alloy
   * Wα = (97% - 15%)/(97% - 5%) = 89%
   * Wβ = (15% - 5%)/(97% - 5%) = 11%
2. PbMg Alloy
   * Wα = 25% Pb
3. AgCu Alloy
   * WL = (93% - 85%)/(93% - 75%) = 44%
   * Wβ = (85% - 75%)/(93% - 75%) = 56%
4. ZnCu Alloy
   * Wβ’ = (58% - 55%)/(58% - 50%) = 38%
   * Wγ = (55% - 50%)/(58% - 50%) = 63%