6.2 For the preceding problem, use the inverse lever rule to determine the proportions of liquid and solid phases present in the alloy.

Solution: From Fig 6.2, measured values of CL and CS are: CL = 5 mm, CS = 12 mm.
Liquid phase proportion = 12/(12 + 5) = 12/17 = **0.71**
Solid phase proportion = 5/17 = **0.29**

6.3 Using the lead-tin phase diagram in Figure 6.3, determine the liquid and solid phase compositions for a nominal composition of 40% Sn and 60% Pb at 204°C (400°F).

Solution: From Fig 6.3, the compositions are observed as follows:
Liquid phase composition = **56% Sn - 44% Pb.**
α phase composition = **18% Sn - 82% Pb.**

6.4 For the preceding problem, use the inverse lever rule to determine the proportions of liquid and solid phases present in the alloy.

Solution: From Fig 6.3, measured values of CL and CS are: CL = 10.5 mm, CS = 15 mm.
Liquid phase proportion = 15/(15 + 10.5) = 15/25.5 = **0.59**
α phase proportion = 10.5/25.5 = **0.41**

6.5 Using the lead-tin phase diagram in Figure 6.3, determine the liquid and solid phase compositions for a nominal composition of 90% Sn and 10% Pb at 204°C (400°F).

Solution: From Fig 6.3, the compositions are observed as follows:
Liquid phase composition = **78% Sn - 22% Pb**.
β phase composition = **98% Sn - 2% Pb.**

6.6 For the preceding problem, use the inverse lever rule to determine the proportions of liquid and solid phases present in the alloy.

Solution: From Fig 6.3, measured values of CL and CS are: CL = 7.8 mm, CS = 4.2 mm.
Liquid phase proportion = 4.2/(13) = **0.32**
α phase proportion = 7.8/13 = **0.68**

6.7 In the iron-iron carbide phase diagram of Figure 6.4, identify the phase or phases present at the following temperatures and nominal compositions: (a) 650°C (1200°F) and 2% Fe_3C, (b) 760°C (1400°F) and 2% Fe_3C, and (c) 1095°C (2000°F) and 1% Fe_3C.

Solution: (a) Alpha + iron carbide, (b) gamma + iron carbide, and (c) gamma.