Binary Phase Diagrams - Eutectic Behavior

1. On the attached diagram, outline each liquidus line in green, each solidus line in brown.

2. Label the diagram with point A, 80 wt. % Cd at 350°C, trace the cooling behavior of the melt down to 0°C. Show the path followed by the liquid in red, the path followed by the solid in blue. Then answer the following questions for:

   2A: a) At what temperature does the first crystal appear? _________________
   b) What is the composition of the first crystal? _________________
   c) At what temperature does the first crystal of Bi appear? ___
   d) At what temperature does the liquid disappear? _________________
   e) What is the composition of the final liquid phase? _________________
   f) What is the composition of the final solid mixture? (Phases present and percent of each) _________________

3. Starting at point B, 20 wt.%Cd at 0°C, trace the behavior of the solid up to 350°C. Indicate the paths followed by the solid and liquid as in question 2. Then answer the following questions:

   3B a) At what temperature does the first liquid appear? ______
   b) What is the composition of the first liquid? _________________
   c) At what temperature does the Bi disappear? _________________
   d) At what temperature does the last solid disappear? ______
   e) What is the composition of the final solid phase? _________________
   f) What is the composition of the final liquid phase? _________________
Note: The vertical temperature scale markings are 50°C per division, starting at 0°C at the bottom. Use the bottom scale (weight % Cd) for the horizontal axis.