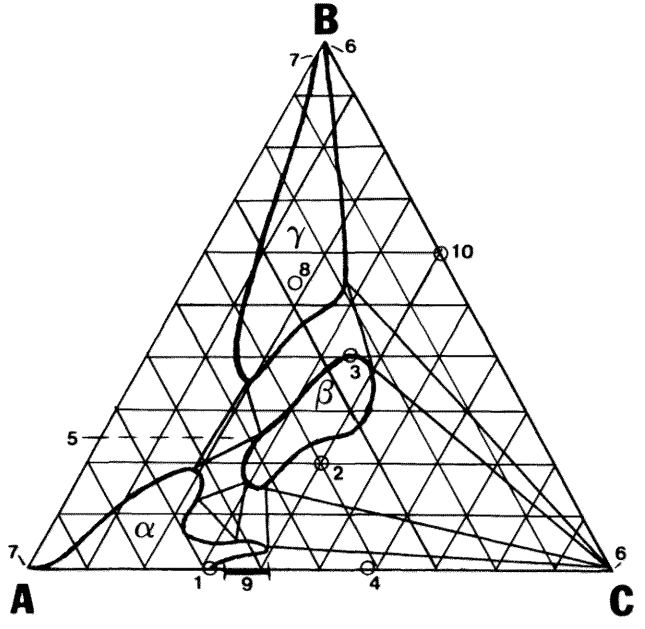

Figure 9.10 Ternary representation of the phase behavior resulting from mixing components A, B, and C. The bold curved lines are the phase boundaries. All compositions within the phase boundary labeled α will form a single phase system (it will not separate after mixing) that is uniquely different from either compositions mixed within the β-phase boundary or the γ-phase boundary. Likewise, single-phase β samples are different from single-phase γ samples. Compositions that are mixed that fall outside of the phase boundaries will be either two-phase systems (separate in two layers) or three-phase systems (separate into three layers). The numbered points or regions on this diagram refer to the questions asked in the text.

4. To reach the maximum amount of B in phase β, to what A/C ratio should B be added?
5. Is it possible to solubilize 25% of B into phase α?
6. Can B and C be mixed to form a single phase?
7. Is A more soluble in B, or is B more soluble in A?
8. If 1 g of A is mixed with 9 g of a 20% A, 60% B, 20% C mixture, will the sample still be single-phase γ?
9. Each of the phases α, β, and γ can be encountered at some point by adding one of the components to a mixture of the other two. What is the ratio of the two components, and which single component must be added?