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BINARY PHASE DIAGRAMS - EUTECTICS AND PERITECTICS

The attached phase diagram shows the equilibrium relationships at 1 Atm for the binary system Mg_2SiO_4 - SiO_2 . The only phases found in the system are liquid, forsterite (Fo), enstatite (En) and cristobalite (Cr).

1. Lines F and G are referred to as the _____ and _____.

2. Points D and E are examples of a _____ and a _____.

3. How many degrees of freedom exist for each of the following points?

A _____

A' _____

D _____

E _____

4. A liquid of composition A is cooled. Describe what happens during perfect equilibrium crystallization. What are the relative proportions of the phases at A'' and A''' (use the lever rule)?

5. A liquid of composition B is cooled. Describe what happens during perfect fractional crystallization.

6. For a solid of composition C describe what would happen during

a. Perfect equilibrium melting

b. Perfect fractional melting

