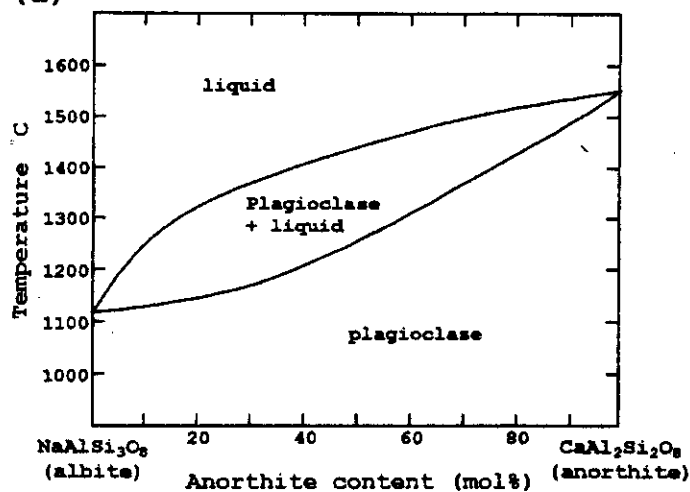


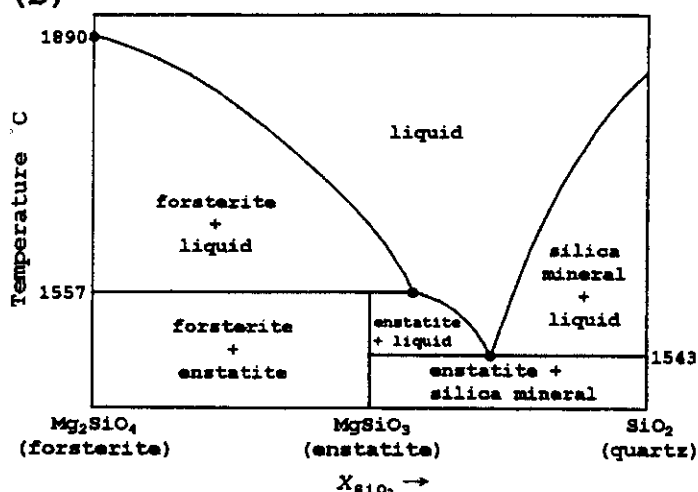
本試題是否可以使用計算機:  可使用,  不可使用 (請命題老師勾選)

1. How is a mineral identified instrumentally? (10 points)
2. What can you say about space group  $F4/m\bar{3}2/m$ ? Two points for each item explained. (10 points)
3. Please show examples to describe Pauling's rules in crystal chemistry. (20 points)
4. Please explain the formation processes and draw schematic figures to illustrate the petrographic features of the following igneous or metamorphic textures: (a) *granoblastic vs. granitic textures*; (b) *porphyritic vs. porphyroblastic textures*; (c) *poikiloblastic vs. poikilitic textures*; (d) *ophitic and trachytic textures*. (20 points)
5. Three different  $T-X$  phase diagrams are given below. Please use them to explain the following phenomena: (a) *eutectic melting*; (b) *peritectic melting*; (c) *zoning*; (d) *fractional melting*. (20 points)

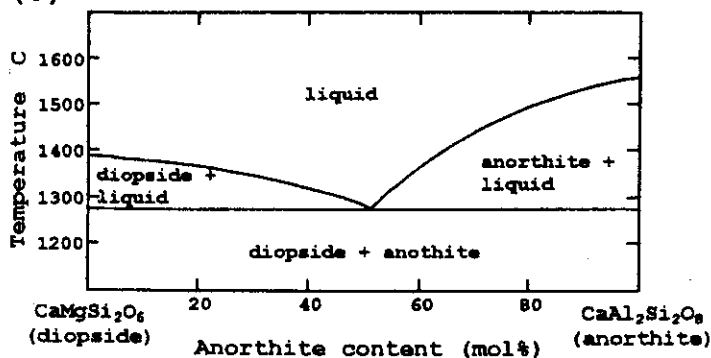
(a)



(b)



(c)



6. Please describe characteristic minerals for mafic rocks, ultramafic rocks, mudrocks, and calcareous rocks in amphibolite- and eclogite-facies metamorphism. (10 points)
7. How is the textural maturity of sands determined in terms of the total input of kinetic energy? (10 points)