

ENRICHMENT

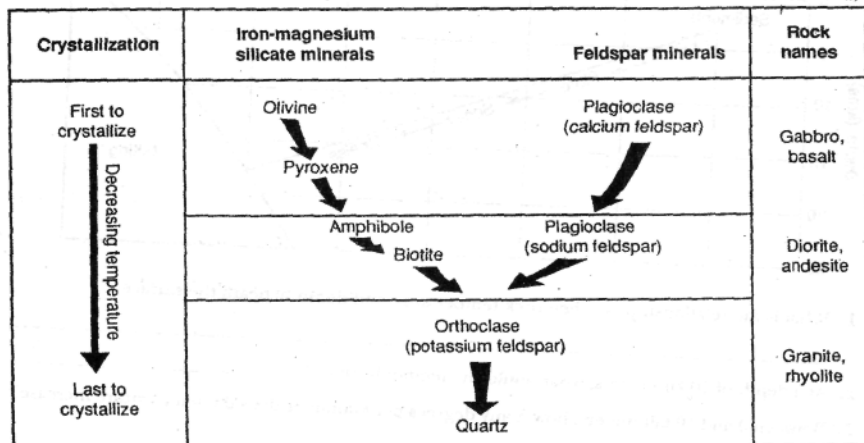
Chapter 4

Igneous Rocks

Text Pages 90-94

CRYSTALLIZATION

This chart represents the order in which different minerals crystallize from a cooling magma or lava to form igneous rocks. Both mineral names and the rocks they form are shown. Use the chart to answer the questions.



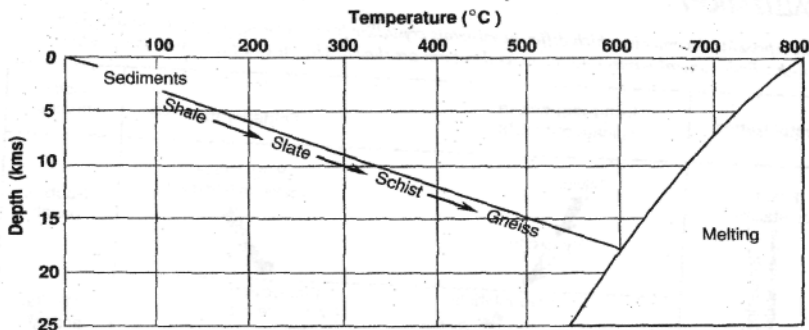
- Which minerals are the first to crystallize from cooling magma? _____
- What kind of rocks are formed by these minerals? _____
- Which mineral crystallizes at the lowest temperature? _____
- Which mineral, pyroxene or orthoclase, crystallizes from magma first? _____
- Which feldspar mineral is found in granite? _____
- What minerals form the rocks diorite and andesite? _____
- Which kind of magma, basaltic or granitic, is hotter? _____
- Minerals higher in silica content crystallize from magma at lower temperatures. Which magma, basaltic or granitic, is higher in silica content? _____
- Magma low in silica content flows more easily. Which kind of lava, basaltic lava or granitic, flows faster? _____

Metamorphic Rocks

Text Pages 95-98

METAMORPHIC PROCESS

Use the graph to answer questions about the formation of metamorphic rocks.



1. What is the relationship between rock temperature and depth beneath the surface?

2. At a depth of 10 kilometers, what would the temperature be? _____
3. Between 0 and 10 kilometers, how many degrees per kilometer does the temperature increase?

4. Which metamorphic rock shown forms at the highest temperature? _____
5. Through what general temperature range would you expect schist to form? _____
6. How many kilometers beneath the surface does gneiss occur? _____
7. As depth increases, what happens to the temperature at which rock melts?

8. Suppose you knew that a certain metamorphic rock begins to form at about 300°C. How many kilometers beneath the surface might this rock temperature occur? _____
9. How far beneath the surface does shale metamorphose to slate? _____
10. Metasomatism is described as a process by which metamorphic rocks may gradually change into granite (an igneous rock). At which temperature does metasomatism begin?
