

name \_\_\_\_\_

Petrology  
Exam #1  
Fall 2008

1. Igneous rocks can be aphanitic, porphyritic, or phaneritic. Define each of these terms. How do these three types of rocks form? That is, describe their histories and how they differ.

2. Igneous rocks can be mafic, silicic, intermediate or ultramafic. Define each of the terms and name one example of each.

3. When you look at a thin sections, there are lots of different features to see. Some are seen in PP light (plane polars) and some in XP light (crossed polars). Put check marks in the appropriate columns below to indicate which kind of light is best for seeing the features.

	plane polars	crossed polars
relief		
interference colors		
birefringence		
cleavage		
twins		
exsolution		
pleochrosim		

Define the following terms:

4. anhedral, euhedral, subhedral

5. phenocryst

6. groundmass

7. inclusions

8. twin (twinned, etc.)

9. foliation

10. porphyroblast

11. equant

12. prismatic

13. skarn

14. augen

15. What is exsolution? Name a mineral that typically shows exsolution. What would the exsolution look like, and what would you do to see it?

16. The table below lists some rock names. For each, indicate whether it is igneous, metamorphic, or sedimentary. And, can you see the mineral grains in the rock without a microscope?

	igneous	metamorphic	sedimentary	visible grains?	microscopic grains?
sandstone					
shale					
limestone					
arkose					
mudstone					
basalt					
andesite					
rhyolite					
schist					
quartzite					
phyllite					
gneiss					
marble					
diorite					
granite					
gabbro					

17. The table below lists some rock names and a bunch of different minerals. Put a check mark in the appropriate columns to show which minerals might be found in which rocks (in significant amounts).

	olivine	garnet	quartz	plagioclase	calcite	biotite	clay
sandstone							
shale							
limestone							
arkose							
mudstone							
basalt							
andesite							
rhyolite							
schist							
quartzite							
phyllite							
gneiss							
marble							
diorite							
granite							
gabbro							

18. When you look at a thin sections, there are lots of different features to see. Some are seen in PP light (plane polars) and some in XP light (crossed polars). Put check marks in the appropriate columns below to indicate which kind of light is best for seeing the features.

	plane polars	crossed polars
relief		
interference colors		
birefringence		
cleavage		
twins		
exsolution		
pleochroism		

19. We have provided you with 20 rock specimens. For each, name the rock and list the minerals that are present (or that you think are present, if you are unsure). We have thin sections for samples 1-200 - just ask for any thin section that you want to see.

ID	name of rock and minerals present
MORB	
KH	
11	
28	
117	
129	
137	
142	
146	
155	
168	
173	
183	
188	
193	
194	
888	
999	

3199	
5219	