

GLY 4310
Homework Exercise 2- Key

Review of Extrusive Igneous Rocks

The following homework is based on the lab lectures for labs 4 and 5. The PowerPoint versions are available on the web pages.

1. MORB stands for Mid-Ocean Ridge Basalt.
- 2-3. Basalts displaying a "pillow" structure are believed to have formed in one of two ways. These are:
 2. By submarine or sublacustrine eruption.
 3. By subaerial eruption, followed by flow into the ocean. 4-5.
- In the terminology used in the United States, the major minerals of diabase are
 - 4) plagioclase and 5) pyroxene.
6. Diabasic texture is (name and describe): Ophitic to subophitic texture in which lath-shaped plagioclase crystals are partially or completely included in pyroxene crystals, typically augite
- 7-9 The major minerals of andesite are:
 - 7) major felsic mineral (name and variety) Plagioclase, usually andesine
 - 8) most common mafic mineral hornblende
 - 9) other possible mafic minerals biotite and pyroxene (either cpx or opx).
10. What is the major difference between dacite mineralogy and andesite mineralogy? In dacite, quartz is an essential mineral, often occurring as phenocrysts. Quartz is generally absent in andesite.
- 11-12 A lithic fragment is 11) crystalline, while a vitric fragment is 12) glassy.
- 13-14 Compare bombs and blocks.
 - 13) Bombs are rounded to sub-rounded, because they were viscous liquids when erupted, and were rounded in flight
 - 14) Blocks are often angular to subangular. They were solidified before the explosion and simply represent shrapnel.
15. The names of extrusive rocks, when based on phenocrysts, should be preceded by the prefix pheno.

16. A pyroclast is an individual particle ejected during a volcanic eruption, and is usually classified according to size.

17-19 Welded tuff is siliceous tuff indurated by the welding together of glass particles under the combined action of three agents, which are:

17) heat retained by the particles

18) the weight of overlying materials, and

19) hot gases.

20. Rhyolite grades into trachyte as quartz content decreases.

21-22 Typical alkali feldspars phenocrysts in rhyolite are:

21) sanidine or

22) anorthoclase

23. What is the P/(A+P) range for latite? 35-65

24-26. Trachyte mineralogy:

24) Major type of feldspar K-spar (perthitic orthoclase or microcline)

25) Compositional range of plagioclase: oligoclase, rarely andesine

26) Most common mafic: diopside to diopsidic augite

27-29. What are the water contents of the following rocks?

27) Obsidian 0%

28) Pearlite Up to 4%

29) Pitchstone 4-10%

30. The chemical composition of both pumice and vitrophyre is like that of which extrusive rock? rhyolite