

Rocks and Minerals Answer Key

For questions 1-9, the identification is worth 1 point and the group/classification is worth another point.

1. Chalcopyrite, sulfides
2. Rhodonite, pyroxene group
3. Muscovite, mica group
4. Staurolite, silicates
5. Agate/Onyx, quartz varieties
6. Kaolinite, silicates
7. Citrine, quartz varieties
8. Chalcedony, quartz varieties
9. Biotite, mica group

For questions 10-12, an answer is worth 1 point each.

10. Igneous: rhyolite, diorite,
Sedimentary: conglomerate, chert
Metamorphic: gneiss, garnet schist
11. Opal (1)
Kaolinite (2)
Goethite (3)
Bornite (4)
Copper (5)
12. Talc (1)
Lepidolite (2)
Olivine (3)
Topaz (4)
Corundum (5)

For questions 13-50, each question is worth 2 points.

13. C. olivine, pyroxene, amphibole, biotite
14. B. hematite
15. C. Pegmatite
16. C. inside a supernova explosion
17. Ulexite, television stone
18. Azurite, chessylite
19. Galena, lead glance
20. Pyrite, fool's gold
21. Halite, rock salt
22. Bornite, peacock ore
23. Halite
24. Sodium chloride
25. Hardness: 2-2.5
Specific gravity: 2.1-2.6
26. Isometric

27. The mineral has the ability to temporarily absorb a small amount of light and an instant later release a small amount of light in a different wavelength. This change in wavelength causes a temporary color change of the mineral in the eye of a human observer.
28. Jasper
29. Silicon dioxide
30. White
31. It would dissolve
32. Piezoelectric Effect is the ability of certain materials to generate an electric charge in response to applied mechanical stress.
33. Spalerite
34. White
35. Yellow or orange
36. Phyllite
37. Shale
38. The name amethyst derives from the ancient Greek word amethystos, meaning sober. It was said that an amethyst could prevent the bearer from becoming excessively drunk and also instills a sober and serious mind.
39. They begin forming when a magma, which is cooling at depth, approaches the crystallization temperature of some of its minerals. These high-crystallization-temperature minerals begin forming below the surface and grow to visible sizes before the magma erupts. When the magma erupts onto the Earth's surface, the rest of the melt crystallizes quickly. This produces a rock with two different crystal sizes: large crystals that formed slowly at depth (known as "phenocrysts"), and small crystals that formed quickly at the surface (known as "groundmass").
40. Scoria forms from basaltic magmas, while pumice forms from rhyolitic magmas - which usually contain more gas. Pumice has a much higher concentration of trapped bubbles - so many that the walls between them are very thin. The vesicles in pumice contain enough air that the rock will float on water. The thick walls of scoria make it heavy enough to sink.
41. Their atoms are stacked in different configurations. That is, they are polymorphs. Aragonite has an orthorhombic structure and calcite has a trigonal structure.
42. The colors are from an iridescent tarnish that forms on bornite upon exposure to air. The tarnish is made of assorted copper oxides or hydroxides that form a mere atoms thin layer over the bornite. The thickness of the layers is close to the wavelength of light. When light waves bounce between the bornite surface and the top of the tarnish layer they will leave with the wavelengths of various colors.
43. The difference between basalt and gabbro is that basalt is a fine-grained rock while gabbro is a coarse-grained rock.
44. Chert
45. Sulfur
46. Staurolite
47. Gneiss
48. Gabbro
49. Basalt
50. Celestine