

Physical Geology

Test 1

Spring, 2005

Please enter your answer in the space next to the number. The last 10 questions are from slides that we will look at together later in the test.

1. _____(T/F) All science is based on the assumption that the natural world behaves in a consistent and predictable manner that is comprehensible through careful, systematic study.
2. _____(T/F) The law of superposition and the principle of fossil succession are each used for relative dating.
3. _____(T/F) Ions form when atoms gain or lose neutrons.
4. _____(T/F) Quartz is the mineral from which plaster and other similar building materials are composed.
5. _____(T/F) Isotopes of the same element have different mass numbers.
6. _____(T/F) Igneous rocks are the rock type most likely to contain fossils.
7. _____(T/F) "Wet" rock buried at depth has a much greater melting temperature than does "dry" rock of the same composition and under the same confining pressure.
8. _____(T/F) In general, the less silica in a magma, the greater its viscosity.
9. _____(T/F) The viscosity of the magma, plus the quantity of dissolved gases and the ease with which they can escape, determine how violent a volcanic eruption will be.
10. _____(T/F) Geologists assume that erosion rates have remained constant throughout geologic time.
11. _____Which of the following is most analogous to the law of superposition?
(a) The glass is older than the crack in it (b) The old mail is on the bottom of the pile (c) The parent is older than the child (d) The rich always come out on top.
12. _____If a hypothesis is used for predictions and repeatedly tested successfully, it becomes (a) an educated guess (b) a method (c) an observation (d) a theory

13. _____When carbon-14 become nitrogen-14, which of the following must have happened? (a) It gained an electron. (b) It lost a neutron. (c) A neutron became a proton. (d) The nucleus split in half.
14. _____Which of the following rock types is formed from preexisting rock that is squeezed and heated, but not melted? (a) evaporite (b) igneous (c) metamorphic (d) sedimentary
15. _____The outermost brittle layer of the Earth is called the (a) aesthenosphere (b) core (c) lithosphere (d) mantle
16. _____At which of the following locations is andesitic magma most likely to be extruded? (a) Hawaii (b) Japan (c) the western margin of South America (d) Yellowstone
17. _____Which of the following is created during a continent-continent plate collision? (a) midoceanic spreading center (b) mountains (c) rift valley (d) subduction zone
18. _____Which of the following is *not* a property of a mineral? (a) It occurs naturally. (b) It has a specific chemical composition. (c) It is formed from ionic bonds. (d) It is inorganic. (e) It is solid.
19. _____Which of the following controls the way elements bond? (a) number of protons (b) number of protons plus neutrons (c) number of electrons (d) valence electrons
20. _____Which of the following controls the atomic mass of an element? (a) number of protons (b) number of protons plus neutrons (c) number of electrons (d) valence electrons
21. _____According to Bowen's reaction series, which of the following is often the last mineral to crystallize from a melt? (a) amphibole (b) mica (c) pyroxene (d) quartz
22. _____When comparing a mafic silicate mineral to a felsic silicate mineral, which of the following is *not* true? (a) Mafic minerals are generally darker. (b) Mafic minerals do not contain three-dimensional framework bonds between silica tetrahedra. (c) Mafic minerals form a thicker, more viscous magma when melted. (d) Mafic minerals have a higher melting point.
23. _____In the story of the Bre-X Minerals, which of the following happened to the geologist most who most likely perpetrated the fraud? (a) He escaped to live a wealthy life in the Caribbean. (b) He was sentenced to life in prison. (c) He was promoted to president of Bre-X Minerals. (d) Wild pigs ate the face off his dead body.
24. _____If a rock has large crystals, which of the following is *least* likely to be true? (a) It cooled slowly. (b) It formed beneath the Earth's surface. (c) It formed from pyroclastic material. (d) It is intrusive.
25. _____Which of the following rocks has the lowest melting point? (a) andesite (b) basalt (c) diorite (d) granite

26. _____Which of the following rocks is likely to be the densest? (a) andesite (b) basalt (c) diorite (d) granite
27. _____Which of the following rocks has the lowest silica content? (a) andesite (b) basalt (c) diorite (d) granite
28. _____Which of the following rocks forms from magma with the greatest viscosity? (a) andesite (b) basalt (c) diorite (d) granite
29. _____Which of the following rocks is most likely to form at volcanoes resulting from subduction zones? (a) andesite (b) basalt (c) diorite (d) granite
30. _____Which of the following rocks is most likely to form plutons in continents, such as in the Sierra Nevada Mountains? (a) andesite (b) basalt (c) diorite (d) granite
31. _____Which of the following rocks is most likely to form from a Hawaiian volcano? (a) andesite (b) basalt (c) diorite (d) granite
32. _____Which of the following rocks is most likely to form at midoceanic spreading centers? (a) andesite (b) basalt (c) diorite (d) granite
33. _____In the story of my dad's heart attack, the change in my mom's cooking of meat can best be compared to (a) assimilation (b) covalent bonding (c) hydrothermal solutions (d) magmatic differentiation
34. _____According to the essay on Lake Nyos, Cameroon, which of the following is *not* true? (a) Carbon dioxide collected near the bottom of the lake. (b) Many people were killed by suffocation from the released carbon dioxide. (c) Soils that form on the flanks of volcanoes are good for agriculture. (d) The carbon dioxide that was released catastrophically from the lake was cool and dense, hugging the ground and low spots. (e) The water at the bottom of the lake was less dense than at the top of the lake, causing it to rise.
35. _____Which of the following volcanoes are typically large and cone-shaped, built primarily of alternating lava flows and pyroclastic material? (a) calderas (b) cinder cones (c) composite cones (d) shield volcanoes
36. _____Which of the following volcanoes are typically large, built primarily of basaltic lava flows, and contain a small percentage of pyroclastic material? (a) calderas (b) cinder cones (c) composite cones (d) shield volcanoes
37. _____When a volcano erupts and then collapses in upon itself, which of the following is formed? (a) calderas (b) cinder cones (c) composite cones (d) shield volcanoes
38. _____The fine-grained volcanic equivalent of granite is (a) andesite (b) basalt (c) diorite (d) gabbro (e) rhyolite
39. _____A lava plateau forms from all of the following *except* (a) basalt (b) a fissure eruption (c) low-viscosity lava (d) pyroclastic flows

40. _____ During the eruption of Mt. St. Helens, which of the following did *not* occur? (a) A geologist died. (b) Most nearby trees were killed. (c) A huge lahar spilled down nearby streams. (d) A vast new shield volcano was formed. (e) The volcano erupted laterally before erupting vertically.

The following questions refer to the slides that we will watch together.

41. _____ In the slide shown, a red line marked *Here* is located at 65 million years b.p. What is the major event that occurred at that time? (a) death of the dinosaurs (b) the dodo became extinct (c) evolution of shells and other hard parts that were preserved as fossils (d) the first humans evolved
42. _____ The trench indicated by the yellow line indicates that to the east lies (a) Africa (b) exposed mantle (c) an oceanic hot spot (d) a subduction zone
43. _____ For the mineral shown, which is *not* true? (a) It is quartz. (b) It is made of nearly pure silica. (c) Silica tetrahedra are bonded in a three-dimensional framework. (d) It is the most common rock on the earth's surface.
44. _____ Two type of bonding are shown, labelled X and Y. Which of the following statements is *not* true about the bonds? (a) Common salt is bonded as shown in X. (b) Diamond is bonded as shown in Y. (c) Graphite is bonded as shown in X. (d) Y demonstrates covalent bonding. (e) Y produces stronger bonds than X
45. _____ (T/F) The mineral shown in the slide is copper.
46. _____ In the slide shown, the rock pairs that occur in the blue box labelled Y are (a) andesite and diorite (b) basalt and gabbro (c) basalt and granite. (d) granite and rhyolite
47. _____ In the slide shown is (a) a blowout at an oil rig (b) degassing at Lake Nyos, Cameroon (c) Old Faithful Geyser (d) a pyroclastic eruption
48. _____ The lava flow shown is all of the following *except* (a) basaltic (b) mafic (c) pahoehoe (Hawaiian for *ropy texture*) (d) pyroclastic
49. _____ Shiprock, NM, is an example of a (a) cinder cone (b) pluton (c) shield volcano (d) volcanic neck
50. _____ The feature labelled X in the slide is (a) a dike (b) a lava flow (c) a pluton (d) a sill