

Choose **one best** answer for questions 1- 25

1. What is the currently accepted age of earth?
a) 4.6 thousand yrs b) 6.4 trillion yrs c) 4.6 billion yrs d) 6.4 million yrs
e) timeless, as the Earth has always existed.
2. Which is the leading hypothesis describing the formation of the Sun, Earth and other planets in the solar system?
a) planetary assembly b) nebular c) astrostellar d) solar refluxing e) elastic rebound
3. The ancient Greeks, and especially noted philosophers such as Aristotle
a) First defined the concept of Uniformitarianism
b) held theories about Earth's land formation, fossils, etc. which are still accepted nowadays
c) were contemporaneous to Europe's "dark ages" but were not influenced by them
d) held theories about Earth's land formation, fossils, etc. which were arbitrary pronouncements
e) did not reflect on Earth processes, since Geology as a science started until the 1700's.
4. Which one does **not** describe a part of Earth physical environment?
a) solid Earth b) astrosphere c) hydrosphere d) atmosphere e) lithosphere
5. Which response shows the Earth's internal layers in correct order from the center outward?
a) core, inner mantle, outer mantle, crust c) inner core, outer core, mantle, crust
b) inner core, crust, mantle, hydrosphere d) core, crust, mantle, hydrosphere
e) core, crust, inner mantle, outer mantle
6. Which of the following is the chemical symbol of potassium?
a) K b) P c) Fe d) I e) Pb
7. This element is Earth's most abundant
a) Si b) O c) Fe d) Ca e) Pb
8. This element is the most abundant in Earth's crust
a) Si b) O c) Fe d) Ca e) Pb
9. Besides Si, which element is present in all silicates?
a) Si b) O c) Fe d) Ca e) Pb
10. Which mineral is the hardest known substance?
a) diamond b) gold c) turquoise d) steel e) strongianite
11. Which of the following is the chemical symbol of Iron?
a) K b) P c) Fe d) I e) Pb
12. An atom's mass number is 13 and its atomic number is 6. How many protons are in its nucleus?
a) 19 b) 7 c) 13 d) 6 e) 8
13. An atom's mass number is 13 and its atomic number is 6. How many neutrons are in its nucleus?
a) 19 b) 7 c) 13 d) 6 e) 8

14. What basic atomic particles occupy space in an atom outside the nucleus?
 a) protons b) neutrons c) neurons d) isotrons e) electrons
15. Which is the chemical formula of calcite?
 a) NaCl b) $\text{Ca}_5(\text{F,Cl})(\text{PO})_3$ c) CaSO_4 d) CaCO_3 e) CaS_2
16. Which chemical bond is the strongest of all?
 a) piezoelectric b) Van der Waals c) ionic d) concomitant e) covalent
17. Which chemical bond allows water to break it during the dissolution process?
 a) piezoelectric b) Van der Waals c) ionic d) concomitant e) covalent
18. Which mineral is used to fabricate pencil leads?
 a) calcite b) graphite c) galena d) sphalerite e) quartz
19. Which mineral is used to make cement?
 a) calcite b) graphite c) galena d) sphalerite e) quartz
20. Glass is composed almost entirely of this mineral
 a) calcite b) graphite c) galena d) sphalerite e) quartz
21. Which has the highest specific gravity?
 a) wood b) water c) gold d) quartz e) cement
22. Which response describes the light reflecting and transmission characteristics of a mineral?
 a) luster b) color streak c) cleavage d) fluorescence e) vitrification
23. Denotes the strong tendency of certain minerals to break along smooth, parallel planes
 a) luster b) color streak c) cleavage d) fluorescence e) vitrification
24. A mineral with the same chemical composition of diamond:
 a) topaz b) quartz c) graphite d) pyrite e) galena
25. This mineral group is commonly formed as product of weathering
 a) feldspars b) micas c) garnets d) clays e) olivines
26. Which is **not** a rock-forming silicate mineral?
 a) garnet b) orthoclase feldspar c) quartz d) olivine e) calcite
27. All silicates have this fundamental building block
 a) triangle b) tamarisk c) octahedron d) tetrahedron e) hexagon
28. Molten material that forms inside earth
 a) magma b) lava c) pyroclastic d) igneous e) intrusive
29. Vesicular texture develops when the magma forming the rock
 a) is thrown violently to the air d) cools with two different rates of cooling
 b) contains escaping gas bubbles e) is unable to cool properly
 c) cools rather slowly

30. Weathering and erosion of igneous rock produces this
 a) sediments b) sedimentary rock c) metamorphic rock d) lava e) vitrification
31. This rock exhibits vesicular texture
 a) obsidian b) pumice c) limestone d) granite e) porphyry
32. The molten material within a magma chamber is composed of these
 a) ions b) isotopes c) polymorphs d) phenocrysts e) pyroclasts
33. The texture of igneous rock is related to this
 a) color of the rock b) grain size c) presence of striations d) composition e) streak
34. Igneous rocks that form at depth are called this
 a) plutonic b) volcanic bombs c) granodiorites d) pyroclastic e) granite
35. The least explosive volcanoes form from this type of lava
 a) solidified b) granitic c) basaltic d) intermediate e) red
36. Composite cones are associated to this type of magma
 a) solidified b) granitic c) basaltic d) intermediate e) red
37. The mountains forming Sierra Nevada (at the California- Nevada border) are an example of this
 a) caldera b) shield volcano c) cinder cone d) composite cone e) batholith
38. Mauna Loa (volcano in Hawaii) is an example of this
 a) caldera b) shield volcano c) cinder cone d) composite cone e) batholith
39. The most abundant gas expelled in a volcanic eruption is
 a) carbon dioxide b) sulfur dioxide c) silicate oxide d) water vapor e) ice
40. This is an example of a discordant pluton
 a) caldera b) composite cone c) sill d) dike e) laccolith
- 41-44. Fill the blanks with the name and texture of the corresponding **igneous rock**

Name	Texture	Properties or use
	phaneritic	Mainly composed by relatively large (visible) quartz and K-feldspar crystals
		Because the rate of cooling is instantaneous, no minerals are formed.
		Abundant in surface layer of the oceanic crust.
		Used to give denim the “worn” look and to treat calluses. So light that may float in water.

45-47. Describe each of the following volcanic hazards (at least **three** characteristics each)

Lahar	
Lava	
Pyroclastic flow	

48-50. Label the **empty box** and **each of the arrows** with the type of rock or rock-forming process respectively. This is only a part of the rock cycle; do **NOT** draw any more arrows or boxes.

