

# GEOLOGY 1C

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### TEST # 1 - Sample Questions

#### TRUE or FALSE

1. Earth's lithosphere is composed entirely of the crust.
2. The lithosphere is able to move across the surface of the Earth because it rests on the liquid outer core.
3. Geology encompasses a broad spectrum of disciplines.
4. Plate tectonics is the theory that regards the lithosphere as divided into segments that are in horizontal motion across the outer Earth.
5. One process that generates sediments is the erosion of rocks that have been uplifted and exposed at the Earth's surface.
6. Geological evidence suggests that the Earth is about 4.55 billion years old.
7. Silica is a term for oxygen combined with silicon.
8. A manufactured mineral, (one that does not occur naturally) is not classified as a mineral in geology.
9. All of the most common rock-forming minerals in the Earth's crust are silicate minerals.
10. Calcite (calcium carbonate) is the most common non-silicate mineral in the Earth's crust.
11. The luster of a mineral refers to the characteristics and intensity of light that is reflected from the surface of the mineral.
12. Because of its great hardness, a diamond cannot be cleaved in any direction.
13. Lava is magma beneath the Earth's surface.
14. Extrusive igneous rocks are typically fine grained because they crystallized slowly, deep below the Earth's surface.
15. A concordant structure is parallel to any plane or layering in the country rock.
16. Basaltic magmas flowing onto the Earth build the oceanic crust.
17. Large batholiths are formed by numerous converging and coalescing plutons.
18. Uniformitarianism reflects the belief among geologists that the Earth remains uniform and unchanging through time.
19. The principle of superposition states that within a sequence of undisturbed sedimentary rocks, the layers become younger going from bottom to top.
20. The oldest fossil evidence of life on Earth dates to about 540 mya.
21. The Mesozoic Era is younger than the Cenozoic Era.
22. The oldest rock yet found on Earth approximates 4 billion years old, but older individual mineral grains have been found.
23. The core of the Earth is now thought to be as hot as or hotter than the surface of the sun.

24. Most of what is known about the Earth's core comes from the studies of meteorites.
25. The oceans are thought to have originated from the degassing of a cooling Earth.
26. The number one element in the universe is hydrogen.
27. It has been assumed by most astronomers that the overall age of the universe approaches a mind-boggling 7.25 billion years.
28. Our solar system was born with the birth of our sun and is, therefore, about 5 billion years old.
29. The planet Earth, a small, grossly insignificant, rock strewn entity, exists at the outer edges of a spiral galaxy called the Milky Way.
30. Truly, it could be said that our universe consists only of stars and planets and other material that was or will be star or planet stuff.
31. Our solar system is believed to have formed from an enormous cloud or nebula that was rich in hydrogen and helium.
32. Rocks are aggregates of one or more minerals.
33. The Precambrian accounts for slightly less than one-half of all geologic time.
34. The Paleozoic is the era of "ancient life."

# MULTIPLE CHOICE ----- TEST # 1.

1. Physical geology is the study of
  1. Earth's materials
  2. changes in the surface and interior of the earth
  3. the dynamic forces that cause the changes in the earth
  4. how the earth works
  5. all of the previous answers are correct.
  
2. Among other fields, geologists are employed as
  1. petroleum geologists
  2. Environmental geologists
  3. Marine geologists
  4. Hydrologists
  5. all of the previous answers are correct.
  
3. Rock deep within the earth is..... and .....

  1. hot ....heat flows inward toward the Earth's center
  2. cool .....heat flows towards the Earth's center
  3. hot ..... Heat flows towards the Earth's surface
  4. the same temperature throughout the earth.....heat flow is not an important consideration
  5. unknown.....can only be estimated.

  
4. Earth's external heat engine is driven by
  1. solar energy
  2. residual cosmic radiation from the Big Bang
  3. the decay of radioactive isotopes
  4. tides
  5. New York City cab drivers.
  
5. What term refers to the vertical movement of the earth's crust to achieve density balance between regions of light and dense rock.
  1. terrane balance
  2. isostatic adjustment
  3. turgid manipulation
  4. gravity flow.
  
6. The earth's heat engine works because hot material deep within the earth.....while cool material.....
  1. expands and rises....contracts and sinks
  2. contracts and sinks....expands and rises
  3. contracts and rises....expands and sinks
  4. expands and sinks....contracts and rises.
  
7. Listed from the earth's center outward, the major divisions are
  1. crust, mantle, outer core, inner core
  2. inner core, outer core, crust mantle
  3. mantle crust, outer core, inner core
  4. outer core, inner core, mantle, crust
  5. inner core, outer core, mantle, crust.
  
8. The lithosphere is collectively made up of
  1. the crust and the mantle
  2. the crust and the uppermost part of the mantle
  3. the crust and the asthenosphere
  4. the upper and lower mantle
  5. the asthenosphere and upper mantle.

9. A hypothesis that passes repeated tests to its validity ultimately becomes a(n)  
1. axiom      2. scholarly observation of considerable note      3. theory  
4. tentative idea to explain phenomena      5. proven law of nature.
10. The soft, flowing portion of the mantle underlying the lithosphere is called the  
1. crust      2. asthenosphere      3. hydrosphere      4. core      5. plate.
11. Plate tectonics is a unifying idea that helps to explain where and why there are  
1. earthquakes      2. volcanoes      3. mountain belts      4. oceanic ridges and trenches  
5. all of the previous answers.
12. The two major types of crust are  
1. oceanic and continental      2. convergent and divergent      3. oceanic and thin section  
4. continental and convergent      5. divergent and oceanic.
13. What type of rock is formed from magma or lava?  
1. igneous      2. sedimentary      3. metamorphic      4. crustal      5. gelaticide.
14. Any rock, under intense heat and pressure, may change into  
1. sedimentary rock      2. igneous rock      3. metamorphic rock      4. granitic rock  
5. any of these choices.
15. Fossil evidence suggests that the earliest humans dwelt on the earth  
1. 3000 years ago      2. 30,000 years ago      3. 300,000 years ago  
4. 3,000,000 years ago      5. 30,000,000 years ago.
16. The two most abundant elements in the earth's crust are  
1. iron and magnesium      2. carbon and hydrogen      3. carbon and oxygen  
4. oxygen and silicon      5. magnesium and manganese.
17. In order for a particular type of material to be classified as a mineral, it must  
1. be a solid      2. occur naturally      3. have a crystalline structure  
4. have a definite chemical composition      5. all of the previous answers are correct
18. When seawater evaporates, the sodium and chlorine in the water combine to precipitate as  
1. quartz      2. halite      3. clay      4. calcite      5. hematite.
19. This important mineral is a non-silicate, has three directions of cleavage to form a rhombohedron and it effervesces in the presence of acid. What is it?  
1. orthoclase      2. quartz      3. hornblende      4. galena      5. calcite.
20. Of the following, the hardest mineral is  
1. corundum      2. quartz      3. orthoclase      4. calcite      5. talc.

21. The density (specific gravity) of any mineral is determined by a comparison of that mineral's density compared to  
 1. liquid water    2. solid water    3. quartz    4. oxygen    5. none of these choices.
22. ....igneous rocks crystallize at or near the Earth's surface while.....igneous rocks crystallize deep within the Earth.  
 1. intrusive.....volcanic            2. volcanic .....extrusive            3. extrusive.....intrusive  
 4. plutonic.....extrusive            5. plutonic.....volcanic.
23. Igneous rocks such as basalt and gabbro that are dark in color are referred to as  
 1. intrusive    2. extrusive    3. intermediate    4. felsic    5. mafic.
24. As one descends inside the earth, the geothermal gradient (temperature increase) approximates  
 1. .004°C /km    2. 2.5°C/km    3. 30°C/km    4. 90°C/km    5. 250°C/km.
25. When magma fills a crack that cuts discordantly across the pre-existing layering of the country rock, the result is an igneous  
 1. sill    2. mantle    3. batholith    4. laccolith    5. dike.
26. Mafic igneous rocks are enriched in  
 1. silica                            2. quartz                            3. magnesium, iron and calcium  
 4. sodium and potassium    5. carbonate ions.
27. Igneous rock that has crystallized (hardened) within the "throat" of a volcano forms a(n)  
 1. neck    2. sill    3. laccolith    4. batholith    5. dike.
28. What is the most abundant igneous rock in a continental mountain range?  
 1. basalt    2. granite    3. rhyolite    4. gabbro    5. obsidian.
29. Geologists regard basaltic magma as a result of the partial melting of ultramafic rock in the  
 1. oceanic crust    2. continental crust    3. mantle    4. outer core    5. inner core.
30. Viscosity is a property of a fluid that relates to how easily the fluid flows. A material that is viscous  
 1. flows easily    2. flows less easily    3. is always hot    4. is always a solid    5. is cold.
31. The presence of more. ....in the magma tends to make that magma more viscous  
 1. silica    2. olivine    3. pyroxene    4. water    5. hornblende.
32. Most dinosaurs became extinct about how many years ago?  
 1. 125,000    2. 2.5 million    3. 65 million    4. 259 million    5. 545 million.
33. We are currently living in the geologic time interval known as the  
 1. Paleozoic era    2. Cenozoic era    3. Mesozoic era    4. Precambrian era

34. When a marine geologist collects a core sample of ocean floor sediment, she knows that the youngest layer is on the top of the core because of the principle known as  
1. supposition    2. suspension    3. innate solution    4. superposition    5. inclusion.
35. Fossils are common in  
1. all rock types                      2. plutonic rocks                      3. sedimentary rocks  
4. metamorphic rocks                5. volcanic rocks.
36. A fossil that is considered short-lived and is a geographically widespread species that existed during a specific interval of geologic time is called  
1. assemblage fossil    2. index fossil    3. range fossil    4. interval fossil  
5. age fossil.
37. Which of the following planets is not just a big rock?  
1. Mercury    2. Jupiter    3. Venus    4. Mars    5. Pluto
38. Our galaxy is called the  
1. Oort Cloud    2. Kuiper Belt    3. Asteroid Belt    4. Milky Way    5. Solar System.
39. According to current astronomical thinking, the approximate age of the universe is  
1. 14 billion years    2. 4000 years    3. 500 million years    4. 1 billion years  
5. 100,000 years.
40. The internal heat of the Earth and other rocky planets comes from a combination of gravitational energy, earlier meteor impacts and  
1. heat from the sun                2. energy left over from the Big Bang                3. radioactivity  
4. cosmic rays                5. the greenhouse effect.
41. Temperatures taken deep within wells and mines show that with depth, temperature  
1. decreases    2. increases    3. remains about the same    4. changes unpredictably  
5. moves higher and lower in predictable waves.
42. Even though much of the rock found in the deeper areas of the crust and upper mantle is very hot, it is kept solid because of  
1. low pressure    2. high pressure    3. radioactivity    4. solar radiation  
5. intrinsic variability.
43. The study of fossils has helped man's knowledge of  
1. volcanic processes    2. sedimentary accumulation    3. planetary ecology  
4. orogeny    5. temperature variation among the different species.
44. Which boundary is approximately 1700 miles beneath the crust?  
1. crust and mantle    2. mantle and core    3. inner and outer cores    4. there are no known boundaries at that depth.

45. The most common mineral of the Earth's crust is  
1. mica      2. quartz      3. olivine      4. hornblende      5. feldspar.
46. The Earth's magnetic field is believed to be generated in this region.  
1. the crust      2. the core      3. the asthenosphere      4. the mantle  
5. the low velocity zone.
47. The basic building block of the silicate minerals is called the  
1. silicon-oxygen tetrahedron      2. aluminum-silicon octahedron      3. silica connection  
4. feldspathic orientation      5. none of these.
48. The forces and processes that can be observed shaping our present day landscapes have also operated in the geologic past and will persist into our future as a planet. This is the concept known as  
1. uniformitarianism      2. catastrophism      3. Ussher's premise  
4. Aristotle's hypothesis      5. Bullwinkle's byword.
49. The average composition of the rock within the Earth's continental crust most closely approximates that of  
1. granite      2. basalt      3. peridotite      4. iron      5. ultramafics.
50. The resistance of a mineral to abrasion is measured by  
1. the Mohs Scale      2. the mineral's luster      3. its cleavage      4. its density  
5. the Abrasive Scale.
51. What is the most abundant metal in the Earth's crust?  
1. oxygen      2. iron      3. silicon      4. magnesium      5. aluminum.
52. The eleven editions of PRINCIPLES OF GEOLOGY, which greatly aided the cause of geology as a science, were written by  
1. Archbishop Ussher      2. Barney Rubble      3. Charles Lyell      4. James Hutton  
5. Charles Darwin.
53. The molten metallic area of the Earth's interior is the  
1. asthenosphere      2. mantle      3. lithosphere      4. inner core      5. outer core.
54. James Hutton's remark: "I see no vestige of a beginning and no prospect of an end" implied that  
1. the age of the Earth is infinite      2. Hutton was an atheist      3. the oldest rocks he found were products of the great geological cycle      4. he was confused about the different rock types      5. none of these.
55. The lithosphere is the same as  
1. the crust      2. the layer beneath the crust      3. the crust and uppermost mantle  
4. a general term used to denote solidity      5. the density of the core regions.

56. The incredibly powerful forces created inside the Earth that cause deformation of rock as well as horizontal and vertical movement of the Earth's crust are called
1. tectonic forces
  2. erosional forces
  3. gravitational forces
  4. centrifugal.
57. Oceanic and continental crust differ in
1. thickness
  2. age
  3. composition
  4. density
  5. all of these.
58. "Within a sequence of undisturbed sedimentary rocks, the layers get younger from bottom to top" is the principle of
1. original horizontality
  2. cross-cutting
  3. superposition
  4. correlation
  5. none of these
59. The Earth's physical environment is traditionally divided into three parts: lithosphere, atmosphere and
1. ecosphere
  2. geosphere
  3. hydrosphere
  4. metasphere
  5. omnisphere.
60. "The present is the key to the past" relates to
1. catastrophism
  2. uniformitarianism
  3. Aristotle's hypothesis
  4. Tarbuck's theory
  5. none of these.
61. The asthenosphere is part of the
1. stratosphere
  2. outer core
  3. lithosphere
  4. mantle
  5. mesosphere.
62. Who was the Anglican bishop who, in the mid-seventeenth century, used biblical interpretation to determine that the Earth was created in 4004 B.C.?
1. Hutton
  2. Ussher
  3. Playfair
  4. Steno
  5. Lyell.
63. What type of dating can be formulated by using the law of superposition?
1. absolute
  2. radiometric
  3. isotopic
  4. relative
  5. both 1 and 2.
64. The man who pioneered the continental drift hypothesis was
1. J.T. Wilson
  2. Harry Hess
  3. D. H. Matthews
  4. Frederick Vine
  5. Alfred Wegener.
65. Pangaea is
1. another name given the Alaskan earthquake of 1964
  2. a portion of the mid-Atlantic ridge
  3. the German word for 'plate tectonics'
  4. the name of a fossil found in both Africa and South America that led scientists to believe that these continents were once connected
  5. the name of a supercontinent.
66. The energy that causes plates to move is derived from
1. tidal forces
  2. solar energy
  3. the earth's internal heat
  4. gravitational energy
  5. magnetic energy.

67. Which one of the following is credited with formulating the law of original horizontality?  
1. Nicolaus Steno    2. William Smith    3. James Hutton    4. Ussher    5. Lord Kelvin.
68. The asthenosphere is  
1. a cool, rigid zone directly above the lithosphere  
2. a name given to the molten outer core  
3. a source of magma at plate boundaries  
4. located immediately above the Earth's atmosphere  
5. more than one of these choices.
69. According to the concept of plate tectonics, the Earth's lithosphere consists of large individual pieces called  
1. terranes    2. crustal rafts    3. island arcs    4. hot spots    5. rigid plates.
70. Temperatures generated by volcanic eruptions approximate  
1. 100\* C.    2. 1000\* C.    3. 10,000\* C.    4. 100,000\* C.    5. none of these.
71. The dense core of the Earth is thought to consist predominantly of  
1. nickel    2. lead    3. iron    4. magnesium    5. feldspar.
72. How many tectonic plates are believed to exist as part of the Earth's crust?  
1. 5    2. 14    3. 26    4. 39    5. there is really no way to know.
73. Moving from the interior depths of the Earth toward the surface, which relationship is true?  
1. pressure and temperature increase    2. pressure increases and temperature decreases  
3. temperature and pressure decrease    4. temperature increases and pressure decreases  
5. there is no change in temperature or pressure.
74. Most of our knowledge about the Earth's interior comes from  
1. drill holes    2. examination of deep mine shafts    3. seismic waves  
4. volcanic eruptions    5. exposed batholiths.
75. The agents of metamorphism are  
1. contact and regional deformation    2. heat, pressure and chemically active fluids  
3. foliation and deposition    4. slaty and platy cleavage    5. James Bond & Austin Powers.
76. The process of metamorphism involves  
1. the formation of rock from magma    2. the transformation of pre-existing rock  
3. the decomposition of sedimentary rock    4. the mass movement of rock material  
5. only Precambrian rocks.
77. What is the ultimate source of the rock on the Earth's surface?  
1. crystallization of oceanic sediments    2. eruption of magma from the mantle  
3. uplift of mantle rock    4. meteoric collision    5. eruption of magma from the core.

78. The most abundant gas associated with violent volcanic activity is  
1. water vapor    2. carbon dioxide    3. chlorine    4. sulfur    5. hydrogen sulfide.
79. Intrusive igneous rock can also be called  
1. magma    2. foliated    3. lava    4. carbonates    5. formed at the surface.
80. The Earth's lithosphere is defined as  
1. a rocky layer having a relatively uniform chemical composition  
2. a rigid layer of crustal and mantle material  
3. a rocky layer composed mainly of crustal rocks  
4. a plastic layer composed chiefly of mantle material  
5. synonymous with the low velocity zone.
81. The breakup of Pangaea began approximately .....million years ago.  
1. 10    2. 35    3. 65    4. 150    5. 250.
82. The fundamental building blocks of the Earth's crust is a combination of four oxygen atoms and one silicon atom. This arrangement is called the  
1. the silicate cube    2. the oxygen complex    3. the silicate tetrahedron  
4. the silicon complex    5. the sulfide tetrahedron.
83. Which one of the following statements about the Earth's crust is not true?  
1. it is the thinnest of the major subdivisions  
2. it is thickest where mountains exist  
3. continental rocks are compositionally different than oceanic rocks  
4. oceanic crust is denser than continental crust  
5. oceanic crust is older than continental crust.
84. An undisturbed horizontal layer of basalt is situated between two sedimentary layers. The top part of the sedimentary layer immediately below the basalt shows the effects of thermal alteration. The bottom of the sedimentary layer immediately above the basalt also reflects the effects of damaging heat transfer. Which of the statements below is most likely to be true regarding the basaltic layer?  
1. the basalt is a lava flow that has been buried  
2. the basalt is a horizontally intruded dike  
3. the basaltic flow is a sill  
4. the formation could be either a buried lava flow or an intruded dike  
5. none of these scenarios is credible.