

Please select the BEST answer for each of the following questions.

1. In our solar system, Earth is
 - a. one of the large outer planets
 - b. larger and denser than any of the other planets
 - c. smaller and less dense than any of the other planets
 - d. one of the large gaseous inner planets
 - e. one of the small dense inner planets

2. Which parts of Earth are NOT entirely solid?
 - a. inner core and lower mantle
 - b. outer core and asthenosphere
 - c. lower crust and lower mantle
 - d. lithosphere and core
 - e. none of the above

3. The lithosphere is
 - a. everything above the asthenosphere
 - b. the crust and upper part of the mantle
 - c. broken up into tectonic plates
 - d. all of the above
 - e. none of the above

4. The deepest parts of the oceans are
 - a. in the middle of the oceans
 - b. in the abyssal plains
 - c. the rift valleys at the top of the ridges
 - d. the oceanic trenches
 - e. the transform faults

5. Which of the following pairs is/are always associated with each other?
 - a. oceanic ridges and transform faults
 - b. trenches and volcanic arcs
 - c. both a and b
 - d. neither a nor b

6. In this course the distinction between continent and ocean based upon
 - a. the type of volcanism that occurs
 - b. the type of earthquakes that occur
 - c. whether the surface is above or below sea level
 - d. the type of crust
 - e. presence or absence of vegetation

7. Which of the following features is/are NOT oceanic?
 - a. oceanic ridge
 - b. oceanic trench
 - c. continental shelf
 - d. transform fault
 - e. all of the above

8. If a large mass of sediment is deposited at a shoreline, the lithosphere in the vicinity of the shoreline is likely to
 - a. move away from the continent
 - b. move toward the continent
 - c. rise
 - d. sink

Element	C	N	O	Fluorine	Neon
Atomic number	6	7	8	9	10
Each electron shell (1 st , 2 nd , 3 rd) is full if it contains 2, 8, 8 electrons respectively.					

9. Which of the above elements will NOT form a bond with other atoms?
 - a. C
 - b. N
 - c. O
 - d. Fluorine
 - e. Neon

10. Which element listed is present in the highest abundance in earth's crust?
 - a. C
 - b. N
 - c. O
 - d. Fluorine
 - e. Neon

11. C-14
 - a. contains 8 neutrons
 - b. contains 6 protons
 - c. will bond with Ca and O to form calcite
 - d. will become N-14 if a neutron is replaced by a proton
 - e. all of the above

12. Which of the following is a silicate mineral that contains Al?
- muscovite
 - potassium feldspar
 - plagioclase
 - all of the above
 - none of the above
13. Which of the following is/are a framework silicate?
- pyroxene
 - potassium feldspar
 - amphibole
 - all of the above
 - none of the above
14. Mafic rocks almost always
- have a fine-grained texture
 - have a coarse-grained texture
 - contain quartz and K-feldspar
 - contain pyroxene and Ca-plagioclase
 - are formed by mechanical weathering
15. Which of the following is/are volcanic in origin?
- rhyolite
 - basalt
 - andesite
 - all of the above
 - none of the above
16. Which of the following pairs contain(s) the same minerals
- andesite and diorite
 - gabbro and basalt
 - granite and rhyolite
 - all of the above
 - none of the above
17. Generally, the chain silicates (single or double) crystallize and/or melt
- at higher temperatures than olivine
 - at higher temperatures than the sheet silicates
 - at lower temperatures than quartz
18. Beach sand is likely to contain... (Assume equal quantities in the parent rock)
- less pyroxene than olivine
 - less pyroxene than sheet silicates
 - more pyroxene than quartz
19. Which of the following pairs include a mineral and its chemical weathering product?
- feldspar – clay
 - muscovite – clay
 - olivine – iron oxide
 - all of the above
 - none of the above
20. Limestone is composed mostly of
- halite
 - gypsum
 - calcite or aragonite
 - clay
 - plagioclase
21. The precipitation of limestone
- adds CO₂ to the environment
 - occurs most commonly in acidic water
 - commonly occurs in the form of shells and skeletons of marine animals
 - all of the above
22. Most of the United States lies in a wind belt known as the
- Trade Winds
 - Doldrums
 - Jet Stream
 - Prevailing Westerlies
 - Prevailing Easterlies
23. The type of rock shown on the slide is
- mafic igneous
 - felsic igneous
 - detrital (clastic) sedimentary
 - chemical sedimentary
 - metamorphic

24. The type of rock shown in the slide is
 a. mafic igneous
 b. felsic igneous
 c. detrital (clastic) sedimentary
 d. chemical sedimentary
 e. metamorphic
25. The type of rock shown in the slide is
 a. mafic igneous
 b. felsic igneous
 c. detrital (clastic) sedimentary
 d. chemical sedimentary
 e. metamorphic
26. **Please refer to slide.** There are 3 strata labeled sandstone, conglomerate and shale. The oldest is
 a. sandstone
 b. conglomerate
 c. shale
27. **Refer to slide.** Dike A is ...
 a. older than Dike B
 b. younger than Dike B
 c. the same age as Dike B
28. **Refer to slide.** Select the answer that lists events in the proper order, oldest to youngest.
 a. Dike B, Dike A, Fault B, Fault A
 b. Dike A, Dike B, Fault A, Fault B
 c. Fault B, Dike A, Fault A, Dike B
 d. Fault A, Fault B, Dike B, Dike A
29. The Colorado Plateau contains many layers of strata that contain fossils. Assuming each layer contains a diverse sample of the animals living at the time the strata was deposited. Which of the following statements is best?
 a. The lowest layer is more likely to contain reptile and mammal fossils.
 b. The highest layer is more likely to contain reptile and mammal fossils.
 c. The top layer is more likely to not contain any fossils at all.
 d. The bottom layer is more likely to contain only fish fossils.
 e. All of the above

<u>Parent</u>	<u>Daughter</u>	<u>Half-life</u>
Uranium-238	Lead-206	4.5 by
Uranium-235	Lead-207	700 my

30. If a mineral contains Uranium, as time passes, the amount of Lead in the mineral is likely to
 a. increase
 b. decrease
 c. remain the same
31. Assume a mineral originally contained Uranium, but no Lead. Today the same mineral contains 3 times as much Lead-207 as Uranium-235 ($U-235/Pb-207 = 1/3$), the mineral is
 a. 1400 my old (1.4 by)
 b. 2100 my old (2.1 by)
 c. 233 my old
 d. Cenozoic
 e. Mesozoic
32. Paleozoic rocks are older than
 a. Precambrian, younger than Mesozoic
 b. Mesozoic, younger than Precambrian
 c. Mesozoic, younger than Cenozoic
 d. Cenozoic, younger than Mesozoic
 e. none of the above
33. Mature or well-developed soils can be the result of
 a. the weathering of non-resistant rocks and minerals
 b. intense weathering in hot, humid climates
 c. weathering over a long time period
 d. all of the above
 e. none of the above
34. In a typical soil (pedalfer or ultisol) you would usually expect to find more
 a. water in the A-horizon than the B-Horizon
 b. clay in the B-horizon than the A-horizon
 c. oxide minerals in the A-horizon than the B-horizon
 d. all of the above
 e. none of the above
35. **Refer to slide.** There are many different types of soils. In class, we talked about 3 types. Which of these is shown in the slide?
 a. ultisol or pedalfer, which has well-developed A- and B-horizon
 b. oxisol or laterite, which has a lot of oxides at the surface and occurs commonly in the tropics
 c. aridosol or pedocal, which is a poorly-developed soil in which horizons are not well-defined

36. Most forms of mass wasting occur
- during the driest parts of the year
 - during times when the ground is saturated
 - in areas of low topographic relief
 - in desert areas
 - during wind storms
37. **Refer to slide.** Which mountain is more likely to have a slope failure if conditions are right?
- the one on the right
 - the one on the left
 - both are equally likely
 - neither is likely to fail
38. Vegetation is an important stabilizer to prevent or slow the effects of
- wind erosion
 - the erosion of soil by flowing water
 - some kinds of mass wasting
 - all of the above
 - none of the above
39. Which of the following processes sort sediment into discrete particle sizes?
- mass wasting
 - flowing water
 - formation of soil
 - all of the above
40. Other things being equal, streams have a higher discharge
- in arid climates
 - on steeper slopes
 - closer to the headwaters of a drainage system
 - closer to baselevel
 - all of the above
41. In a drainage system, rivers or streams flow faster when they are closer to baselevel.
- true
 - false
42. River and stream flooding is LESS likely to occur
- in flat-floored stream valleys
 - at times when the ground is dry
 - in areas where there is a lot of pavement and blacktop
 - during times of very high discharge
 - all of the above
43. Mature stream landscapes
- occur close to the drainage divides
 - contain a lot of small narrow stream valleys
 - are characterized by extensive floodplains
 - have dry stream beds
 - have a lot of v-shaped valleys
44. The drier the climate, the more likely that
- the water table is closer to the ground surface
 - streams flow constantly
 - wind erosion will occur
 - mass wasting will occur
 - karst will form
45. Which of the following is most likely to be an aquitard?
- sand or sandstone
 - clay or shale
 - limestone in karst terrain
46. Groundwater generally flows
- away from wells that pump a lot of water
 - down the dip (tilt) of the confining strata
 - towards areas where the water table is higher
 - all of the above
 - none of the above
47. Carbon dioxide is released into water or into the atmosphere
- when limestone dissolves
 - when calcite precipitates
 - when silicates weather
48. **Please refer to slide.** The landscape shown is primarily the result of erosion and/or deposition by which of the following?
- rivers or streams
 - wind
 - gravity
 - groundwater

49. **Refer to slide.** The landscape shown is primarily the result of erosion and/or deposition by which of the following?
 a. rivers or streams b. wind c. gravity d. groundwater
50. **Refer to slide.** The landscape shown is primarily the result of erosion and/or deposition by which of the following?
 a. rivers or streams b. wind c. gravity d. groundwater
51. **Please refer to slide.** Which of the landscapes shown was/were formed by a glacier?
 a. A b. B c. C d. D e. all of the above
52. Glaciers deposit most of their sediment
 a. at a shoreline. d. under the thickest part of the glacier
 b. on mountain tops. e. all of the above
 c. at the margin of the glacier.
53. At the equator, ...
 a. glaciers cannot exist.
 b. alpine glaciers can exist on high mountain tops.
 c. alpine glaciers can exist at sea level.
 d. continental glaciers can exist on high mountain tops.
 e. continental glaciers can exist at sea level.
54. During the glacial episodes of the Ice Age, ...
 a. sea level was lower than today. d. all of the above
 b. glaciers were present at lower elevations than today. e. none of the above
 c. glaciers were present at lower latitudes than today.
55. During the glacial episodes of the Ice Age, the Chesapeake Bay was
 a. a bay, like it is today. d. part of the continental shelf.
 b. a glacial valley. e. entirely covered by a glacier.
 c. a river valley.
56. Which of the following would be likely to cause global **cooling**?
 a. an increase in dust and particulate matter in the atmosphere c. both a and b
 b. an increase in CO₂ and other greenhouse gases in the atmosphere d. neither a nor b
57. Today, global climates are
 a. warmer than they have ever been c. both a and b
 b. colder than they have ever been d. neither a nor b
58. **Please refer to the slide.** Which of the coastlines shown is a secondary coast shaped by waves, tides and storms?
 a. A b. B c. C d. D e. all of the above
59. At one scale or another, waves break on all shorelines (a true statement). Therefore all shorelines are constantly eroding.
 a. true b. false
60. During hurricanes, coastal flooding and erosion is
 a. worse if the tide is falling. b. worse if the tide is rising. c. not affected by the tide.
61. The clastic or detrital sediment found on most beaches comes from
 a. land areas near the coast d. all of the above
 b. the continental shelf e. none of the above
 c. areas farther out to sea
62. At Ocean City and other sandy beaches along the East Coast, the farther offshore you go,
 a. the more silt you will find d. all of the above
 b. the more gravel you will find e. none of the above
 c. the more limestone you will find
63. One difference between glacial sediment and sediment and beach sediment is that glacial sediment ...
 a. always contains gravel, beach sediment never contains gravel. d. all of the above
 b. is never sandy, beach sediment is always sandy. e. none of the above
 c. is unsorted, beach sediment is sorted.

64. Most of the sediment that is found on and beneath the continental shelf was originally ...
- deposited near a coast.
 - deposited in the deep ocean.
 - blown into the ocean by wind.
65. **Please refer to slide of 3 seismograms.** Note the time along the bottom of the slide. The red arrow indicates a
- P-wave
 - S-wave
 - surface wave
 - normal fault
 - reverse fault
66. **Using the same slide as above,** which seismograph is closer to the epicenter?
- Alaska
 - North Carolina
 - Hawaii
 - all are equidistant
67. The Richter **magnitude** of an earthquake is a value that ...
- is independent of where it is measured.
 - is higher at places closer to the epicenter.
 - varies with the types of buildings in the area.
 - all of the above
 - none of the above
68. Most earthquakes along the San Andreas fault in California have high intensity effects because
- these types of plate boundaries generate high magnitude earthquakes
 - areas close to the fault are densely populated and have lots of buildings
 - both a and b
 - neither a nor b
69. S-waves ...
- travel faster than P-waves
 - travel through solid, liquid and gas
 - do not travel through the outer core
 - all of the above
 - none of the above
70. If a seismic P-wave travels faster through X than through Z, which of the following are possible?
- X has a higher density than Z
 - X is liquid, Z is solid
 - both a and b
 - neither a nor b
71. Lithospheric plates are characterized by
- the active fault zones around their margins
 - the general lack of earthquakes within the plates
 - both a and b
 - neither a nor b
72. **Please refer to the slide.** The faults shown are
- strike-slip faults
 - normal faults
 - reverse faults
 - thrust faults
73. **Use the same slide as above.** This faults shown are associated with
- convergent plate boundaries
 - divergent plate boundaries
74. **Use the same slide as above.** This type of faulting occurs at
- oceanic ridges
 - volcanic arcs
 - submarine trenches
 - all of the above
 - none of the above
75. High magnitude and deep focus earthquakes are most commonly associated with
- all convergent plate margins
 - all divergent plate margins
 - all strike-slip faults at plate margins