

Place answers on answer sheet at Blackboard or Moodle  
Check Syllabus for due date.

## Assignment #8-10: Geology

1. The dip of a unit represents the \_\_\_\_\_ .
  - A. direction of intersection of the rock layer an a horizontal surface
  - B. part of the unit which has been eroded
  - C. angle at which the bed inclines from the horizontal
  - D. tilt of the rock unit before deformation
2. If you are flying in an airplane and you look down at the landscape, you are seeing a \_\_\_\_\_ view of the Earth.
  - A. map
  - B. cross-sectional
  - C. lateral
  - D. horizontal
3. If look at a vertical face of a cliff or a roadcut, you are seeing a \_\_\_\_\_ view of the Earth.
  - A. map
  - B. cross-sectional
  - C. lateral
  - D. horizontal
4. Which of the following types of tectonic forces tends to push two sides of a body in opposite directions so that they slide horizontally past one another?
  - A. tensional forces
  - B. shearing forces
  - C. compressive forces
  - D. none of these
5. What type of forces dominate at divergent plate margins?
  - A. tensional forces
  - B. shearing forces
  - C. compressive forces
  - D. none of these
6. What type of forces dominate at convergent plate margins?
  - A. tensional forces
  - B. shearing forces
  - C. compressive forces
  - D. none of these
7. The angle at which a sedimentary bed is inclined from the horizontal is called the \_\_\_\_\_ .
  - A. anticline
  - B. strike
  - C. syncline
  - D. dip

8. Which of the following is not a tectonic force responsible for folding or faulting rocks
  - A. compressive force
  - B. tensional force
  - C. shear force
  - D. all of these are tectonic forces
9. The two sides of a fold are called its \_\_\_\_\_ .
  - A. anticlines
  - B. synclines
  - C. limbs
  - D. axial planes
10. At convergent plate boundaries one would expect to find \_\_\_\_\_.
  - A. folds
  - B. faults
  - C. folds and faults
  - D. neither folds or faults
11. At divergent plate boundaries one would expect to find \_\_\_\_\_.
  - A. folds
  - B. faults
  - C. folds and faults
  - D. neither folds or faults
12. At transform plate boundaries one would expect to find \_\_\_\_\_.
  - A. folds
  - B. faults
  - C. folds and faults
  - D. neither folds or faults
13. Which of the following statements about rock deformation is false?
  - A. deep crustal rocks are more likely to deform ductily than shallow crustal rocks
  - B. hotter rocks are more likely to deform ductily than cooler rocks
  - C. most sedimentary rocks are more deformable than igneous rocks
  - D. rocks under low confining pressure are more likely to deform ductily than rocks under high confining pressure
14. What types of tectonic forces cause faulting?
  - A. compressive forces
  - B. tensional forces
  - C. shearing forces
  - D. all of these
15. What types of faults are associated with shearing forces?
  - A. normal faults
  - B. reverse faults
  - C. strike-slip
  - D. all of these
16. Which of the following conditions would favor folding rather than faulting?
  - A. low temperatures and low confining pressures
  - B. low temperatures and high confining pressures
  - C. high temperatures and low confining pressures
  - D. high temperatures and high confining pressures

17. Which factor does not affect whether folding is severe or gentle
  - A. the magnitude of the applied forces
  - B. length of time the force was applied
  - C. age of the rock units
  - D. the ability of the rocks to resist deformation
18. What type of fault is characterized by movement both along strike and along dip?
  - A. oblique-slip
  - B. strike slip
  - C. reverse
  - D. normal
19. An oblique-slip fault suggests \_\_\_\_\_
  - A. tensional forces only
  - B. compressive forces only
  - C. shear forces only
  - D. shear forces combined with compressive or tensional forces
20. Strike-slip faults \_\_\_\_\_.
  - A. have primarily horizontal movement
  - B. have primarily vertical movement
  - C. have no appreciable displacement
  - D. are low angle reverse faults
21. Dip-slip faults are associated with \_\_\_\_\_ forces.
  - A. shearing
  - B. tensional
  - C. compressive
  - D. tensional and compressive
22. What type of fault is a thrust fault?
  - A. low-angle normal fault
  - B. low-angle reverse fault
  - C. high-angle reverse fault
  - D. low-angle strike-slip fault
23. The Red Sea is an example of a(n) \_\_\_\_\_.
  - A. anticline
  - B. strike-slip fault basin
  - C. rift valley
  - D. horst block mountain
24. Feldspars weather primarily by
  - A. hydrolysis
  - B. oxidation
  - C. dissolution
  - D. exfoliation
25. Which of the following is most resistant to weathering?
  - A. feldspars
  - B. calcite
  - C. quartz
  - D. soluble minerals

26. In which of the following locations would you most likely find cliffs made of limestone?
- A. the Pacific Northwest region of the U.S.
  - B. the rain forests of Brazil
  - C. eastern U.S.
  - D. southwestern U.S.
27. Calcite is dissolved by naturally acidic water. The natural acidity of surface water is primarily due to
- A. hydrochloric acid
  - B. sulfuric acid
  - C. nitric acid
  - D. carbonic acid
28. The mineral hematite is formed by what weathering process?
- A. freeze-thaw
  - B. unloading
  - C. hydrolysis of feldspar
  - D. oxidation of mafic minerals
29. Freeze-thaw is an example of
- A. physical weathering
  - B. chemical weathering
  - C. dissolution
  - D. hydrolysis
30. Which soil horizon forms from accumulation of material that was removed from surface materials by leaching?
- A. A horizon
  - B. B horizon
  - C. C horizon
  - D. O horizon
31. Which rock type is most resistant to weathering?
- A. limestone
  - B. shale
  - C. granite
  - D. basalts
32. Dark coloring in soils commonly results from the presence of
- A. iron oxides
  - B. hematite
  - C. calcite nodules
  - D. organic matter
33. A horizons are formed by
- A. deposition of material brought in from O horizons
  - B. leaching and transport of materials away from this zone
  - C. saturating the soil with water
  - D. extensive weathering and chemical breakdown of rocks

34. The driving force behind mass wasting is
- A. electrostatic
  - B. gravity
  - C. heat flow from earth's interior
  - D. plate tectonics
35. The main force that resists mass wasting is
- A. the strength of slope materials
  - B. gravity
  - C. slope
  - D. compression
36. How does water influence mass wasting?
- A. saturating a slope with water increases the strength of slope materials
  - B. saturating a slope with water decreases the strength of slope materials
  - C. saturating a slope with water increases the resisting forces
  - D. saturating a slope with water increases cohesion
37. In order to assess how large driving forces are on a particular hillslope, what must be measured?
- A. slope angle
  - B. weight of slope material
  - C. strength of slope materials
  - D. all of the above
  - E. A & B only
38. Mass wasting characterized by a coherent block of material sliding along a curved surface is called
- A. landslide
  - B. rockslide
  - C. creep
  - D. slump
39. Which of the following increases the likelihood of mass wasting on a slope?
- A. good vegetative cover on slope
  - B. high clay content in soils
  - C. planes of weakness oriented parallel to slope
  - D. small amount of moisture in slope materials
40. The mass wasting process that is so slow it is usually recognized only by downslope tilting of fencepost, utility poles, bent tree trunks and similar features is called
- A. landslide
  - B. rockslide
  - C. creep
  - D. slump
41. Which of the following processes may trigger mass wasting?
- A. earthquakes
  - B. heavy rains
  - C. undercutting a slope
  - D. all of the above

42. The safety factor is the ratio of resisting forces to driving forces on a slope. Slopes considered to have low likelihood of mass wasting have safety factors
- A. less than 1
  - B. greater than 1
  - C. about equal to 1
43. Mudslides are most likely to occur on which of the following slopes?
- A. heavily vegetated slopes
  - B. gentle slopes
  - C. rocky mountain peaks
  - D. steep volcanic slopes
44. What type of fluid flow can be visualized as smooth layers of fluid flowing parallel to the river bed with little to no mixing between layers?
- A. turbulent flow
  - B. bed flow
  - C. laminar flow
  - D. current flow
45. Particles that roll and slide along the river bottom are called \_\_\_\_\_.
- A. bed load
  - B. suspended load
  - C. either bed load or suspended load depending on the particle size
  - D. neither bed load nor suspended load
46. As one goes downstream from the headwaters of a river toward its mouth, river slope \_\_\_\_\_.
- A. increases
  - B. decreases
  - C. stays the same
  - D. can increase or decrease
47. The volume of water flowing past a point in a given time is called the \_\_\_\_\_.
- A. competence
  - B. viscosity
  - C. discharge
  - D. capacity
48. River flow velocity depends on
- A. flow depth
  - B. channel slope
  - C. roughness of the channel bed and banks
  - D. all of the above
49. Which of the following statements about streams is false?
- A. For the same discharge, laminar flows generally carry more sediment than turbulent flows.
  - B. Faster currents can carry larger particles than slower currents.
  - C. Faster currents can carry more sediment than slower currents.
  - D. Streams carry coarser particles as bedload and finer particles in suspension.

50. Approximately what percentage of the liquid fresh water on Earth resides underground as groundwater?
- A. 8%
  - B. 22%
  - C. 54%
  - D. 98%
51. True or False: As its name implies, the water table is a flat-planar surface.
- A. True
  - B. False
52. Which statement regarding the water table is NOT true?
- A. The water table is a flat, level surface
  - B. The water table separates the saturated and unsaturated zones
  - C. The water table can exist at Earth's surface
  - D. The water table elevation can fluctuate over time
53. Which material is likely to be most permeable?
- A. Well sorted sandstone
  - B. Well sorted sand
  - C. Poorly sorted sand
54. About how thick is the thickest part of the modern Antarctic ice sheet?
- A. Approximately 40 meters
  - B. Approximately 400 meters
  - C. Approximately 4 kilometers
  - D. Approximately 40 kilometers
55. Which kind of glaciers erode the land more?
- A. Warm-bottom glaciers
  - B. Cold-bottom glaciers
  - C. Nonsliding glaciers
56. During ice ages, what happens to the  $^{18}\text{O}/^{16}\text{O}$  ratio of seawater as evaporated water is stored on land as ice?
- A. The  $^{18}\text{O}/^{16}\text{O}$  ratio increases
  - B. The  $^{18}\text{O}/^{16}\text{O}$  ratio decreases
  - C. The  $^{18}\text{O}/^{16}\text{O}$  ratio does not change
57. About how long ago did the ice sheets reach their largest extent during the last glaciation?
- A. About 2,000,000 years ago
  - B. About 120,000 years ago
  - C. About 21,000 years ago
  - D. About 6,000 years ago
58. How did sea level at the peak of the last ice age (~21,000 years ago) compare to sea level today?
- A. About 20 meters lower than today
  - B. About 20 meters higher than today
  - C. About 100 meters lower than today
  - D. About 100 meters higher than today

59. True or False: Data from sea floor sediments suggest that the last 2.5 million years of Earth history was dominated by one extended ice-age glaciation.

A. True

B. False

60. True or False: The amount of global temperature change directly caused by Milankovitch cycles is great enough to explain the difference in climate during the last ice age compared to today.

A. True

B. False