HOMEWORK SET #5
GEOL 101 – Dr. Weeraratne
Covers Chapters (5,6,11,15) Name _____

1. What is the difference between a joint and a fault?

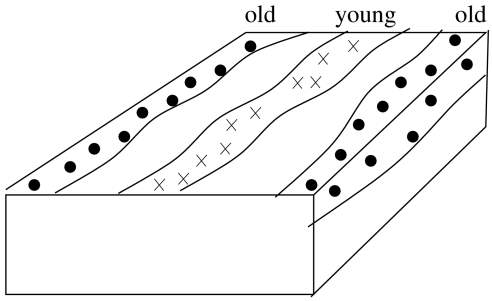
2. The compass direction of a line formed by the intersection of an inclined plane with a horizontal plane is called (a) strike (b) direction of dip (c) angel of dip (d) axis

3. Folds in a rock show that the rock behaved in a _____ way.
(a) elastic (b) ductile (c) brittle (d) all of the proceeding

4. What 2 processes must occur to change sediment into a sedimentary rock ?

5. Thrust faults occur where there is
(a) horizontal extension (b) horizontal shortening (c) strike slip motion (d) tensional stress

6. Indicate whether the outcrop shown is an anticline or a syncline. Also draw in the cross-sectional view.



7. Which rock type has the highest *permeability* ? (a) granite
(b) shale (c) sandstone (d) mudstone

8. Give the definition to ***stress*** and ***strain*** in your own words.

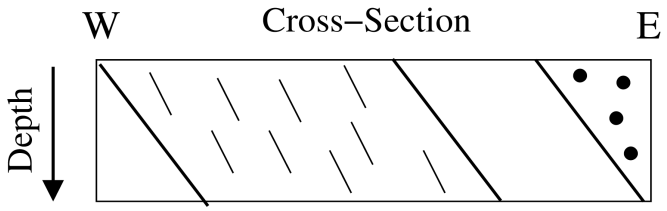
9. If you found a sedimentary rock that had angular grains which were of sizes that varied form 2 mm to 10 cm, what could you say about its origin ?

10. Define the principle of ***Horizontality*** in your own words.

11. Describe 3 processes that mechanically weather rocks.

12.A saturated zone of an aquifer has pore spaces which are _____.
(a) filled with water (b) empty (c) filled with soil (d) collapsed

13. In the cross-section to the right:

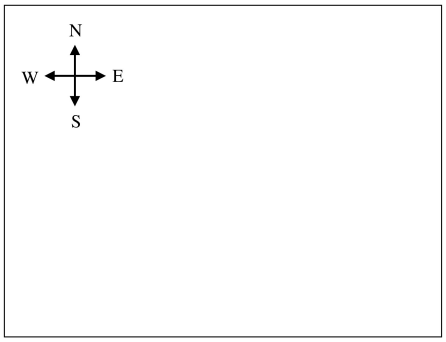


What is the dip direction of the beds? _____

What is the dip angle of the beds ? _____

What is the strike of the beds ? _____

Draw the strike and dip symbol for these beds in map view.



14. Normal faults tend to occur at what type of plate boundary?
(a) strike slip (b) convergent (subduction) (c) divergent (spreading center)

15. What is the definition of ***porosity*** ?

16. How does the lithosphere differ from the asthenosphere ?

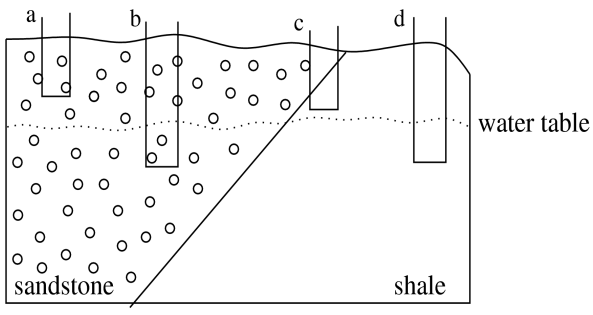
17. The Earth's upper mantle is mainly composed of
(a) granite (b) basalt (c) iron (d) olivine

18. The San Andreas Fault is a
(a) left-lateral strike-slip fault (b) thrust fault (c) right-lateral strike-slip fault (d) normal fault

19. What is the thickness and composition of the oceanic crust?

20. Most of the Earth's ocean water probably came from
(a) degassing of the Earth's interior through volcanism (b) outer space (c) none of the these

21. In the example of ground rock shown to the right, where is the *best* place to drill a well ?



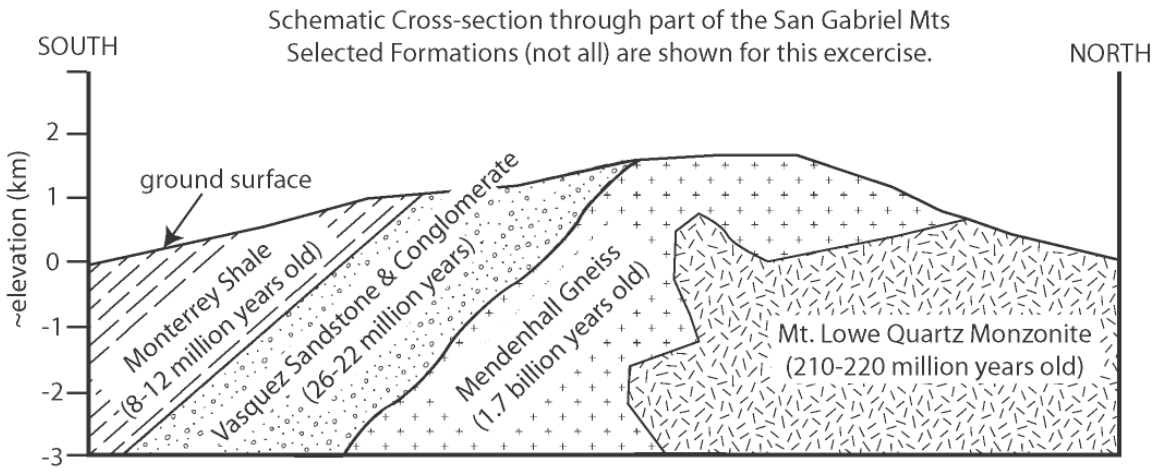
22. What kind of tectonic structure occurs between the Santa Susana Mtns, the San Fernando Valley, and the Santa Monica Mnts ?
(a) anticline (b) fold and thrust belt (c) mountain uplift (d) extensional tectonics

23. A *confined aquifer* is defined as a permeable layer with an impermeable layer _____ it.
(a) above (b) below (c) near (d) above and below

24. Draw a sketch of the geologic structure beneath which an oil reservoir forms. What is the name of this folded structure ? Indicate the location of oil, gas, and water layers.

25. Interpreting Los Angeles Geology: The schematic cross-section below shows a few of the different Formations (rock units) found in the San Gabriel Mountains. Use the figure below to answer the following questions. (You will also see these stratigraphic sections on our class field trip!)

(see next page)



Four different rock types, and their ages, are shown in the figure. Complete the chart below for each of the rock types.

Rock Formation or Geologic Event	Rock Type (igneous, metamorphic, or sedimentary)	Based on the rock types, relative ages, and stratigraphic ***superposition*** of the rocks, interpret the geologic history for the area from OLDEST (1) to YOUNGEST (5). You should be able to identify 5 events and number them in order here.