

## HOMEWORK SET #4

GEOL 101 – Dr. Weeraratne

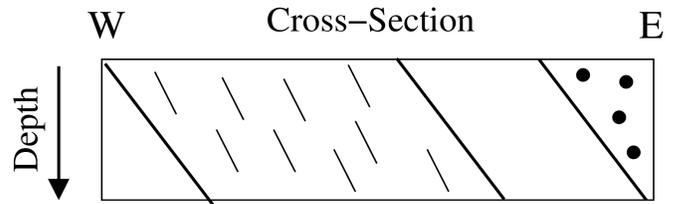
Covers Chapters (5,6,11,15,16)

(Submit all your answers on MOODLE)

Name \_\_\_\_\_

1. What is the difference between a joint and a fault?
2. A *confined aquifer* is defined as a permeable layer with an impermeable layer \_\_\_\_\_ it.  
(a) above (b) below (c) near (d) above and below
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. Draw the layers that would appear in an *anticline* structure.
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 from 2 mm to 10 cm, what could you say about its origin ?
10. Define the principle of **Horizontal**ity 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? \_\_\_\_\_

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. Name 3 types of seismic waves. Describe the particle motion of each wave relative to its propagation (travel) direction.

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. The elastic rebound theory explains

(a) folding of rocks (b) the behavior of seismic waves (c) the sudden release of stored strain in rocks, causing movement along a fault (d) none of the above

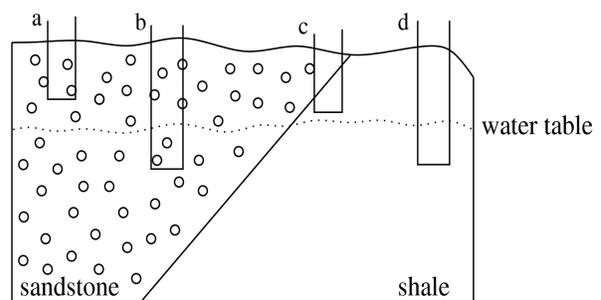
20. In the rupture diagram to the right indicate the location of the earthquake's

-hypocenter

-epicenter

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. 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.

24. If you experienced an earthquake of magnitude 5.5 and your friend in Japan experienced a magnitude 6.5, how much more ground shaking did your friend experience than you?

(a) 2 times more (b) same (c) 10 times more (d) 20 times more

25. What type of fault is the San Andreas Fault ?

a.) thrust (b) normal (c) strike-slip (d) abnormal

26. Why are there large earthquakes (magnitude 6-8) on the San Andreas Fault ?