

REVIEW QUESTIONS FOR FINAL EXAM

Geo 101, Fall 2000

EARTHQUAKES

THE FINAL EXAM FOR MWF CLASS WILL BE TUESDAY 1400

THE FINAL EXAM FOR TR CLASS WILL BE FRIDAY 930

These questions are to help you study for the exam. They are not to turn in. It will be helpful to work with another student or in small groups try to answer the review questions. If you can't find the answer in your notes or in the book, please come to office hours or email questions to the instructor.

The exam will be based on the review questions and the lecture notes. Note that some of the review questions are from the material in the text. The actual exam questions will be multiple choice.

You must take the exam in the lecture section for which you are registered. Any exceptions must be cleared with the instructor in advance.

REVIEW QUESTIONS EARTHQUAKES

- A. FOCUS AND EPICENTER AND STORED ENERGY
1. Between earthquakes, energy is stored in the rock as elastic deformation. This deformation is
 - a. permanent
 - b. temporary
 2. The spot on the ground above the point at which an earthquake starts is called the
 - a. focus
 - b. epicenter
 3. An earthquake ruptures
 - a. only one point
 - b. a section of the fault plane
 - c. the entire fault plane
 - d. all the rock near the fault
 - e. all the rock near where people feel the earthquake

B. SEISMIC WAVES

4. Seismic waves deform the rock that they pass through. This deformation is elastic and it is
 - a. permanent
 - b. temporary
5. Earthquakes produce several types of seismic waves. Please list the two types of body waves.
6. Which type of body wave arrives first?
7. Which type of body wave is biggest?
8. Which type of body wave is a compressional (longitudinal) wave, causing the rock to vibrate forward and backward?
9. Which type of body wave is a shear (transverse) wave?
10. Which are bigger: body waves, or surface waves?
11. Which type of surface waves moves side to side, shearing foundations and shaking buildings?

C. LOCATING THE EPICENTER

12. How is the *distance* to an earthquake determined? (From what data?)
13. How many seismic stations are needed to locate the *epicenter* of an earthquake?

D. RICHTER MAGNITUDE (Local Magnitude) M_L

14. Each step increase in magnitude (for example, from 3 to 4) reflects how much increase in the amplitude (height) of the waves recorded by the seismograph?

Each step up is a _____ times increase in amplitude.

15. Each step increase in magnitude (for example, from 3 to 4) represents how much increase in the *energy* released by the earthquake?

Each step up is a _____ times increase in energy.

E. EARTHQUAKE RISK AND EFFECTS

16. What is liquefaction (of sediment)? What happens?

17. What is a tsunami? Earthquakes at which type of plate boundary are most likely to produce tsunamis? Why?

18. Why are tsunamis so huge and destructive?

19. What should you do if you are on the beach and you feel the earth shake?

F. EARTHQUAKE DISTRIBUTION. Most earthquakes occur on plate boundary faults or on other faults near plate boundaries.

20. Which type of plate boundary (subduction, mid-ocean ridge, or transform) has the deepest earthquakes?

21. Which plate boundary has the largest magnitude earthquakes (greater than magnitude 9, in a few cases)?

22. Which other type of boundary has great earthquakes (greater than magnitude 8)?
23. Which type of plate boundary borders the states of Oregon and Washington, along the edge of the continental shelf?
24. Which type of plate boundary extends through most of California?
25. What is meant by the term "Wadati-Benioff zone" or "Benioff zone"?
26. What kind of fault forms a mid-ocean ridge plate boundary? (normal, reverse or strike-slip?)
27. What kind of fault forms a transform boundary? (normal, reverse, or strike-slip?)
28. What kind of fault forms a subduction zone plate boundary? (normal, reverse, or strike-slip?)