Mark your answers to these questions on an appropriate Scantron form. Do <u>NOT</u> return your test questions, retain them for future reference and for completing your Midterm Revisions. The Revisions are due back on Monday May 10th at the beginning of class; completed on a new Scantron.

Questions 01 through 05: Fill in the blank: Use the word or phrase that <u>BEST</u> completes each sentence in the following paragraph.

Meghan and her friends are at a party, taking a "well-deserved" break from their study of geology. One of their other friends Daljeet asks them what they have been studying so hard this week and they exclaim "geology." Meghan goes on to add that Geology is the "scientific study of the (01) _____ (a. structure; b. nature; c. materials; d. history; e. economics), origin, and evolution of the Earth and other terrestrial bodies. As they discuss what a great guy their professor is… one of them notices a number of partygoers drinking scotch and soda, rum and soda, and yet others drinking gin and soda. He notices, that all of the people drinking these drinks have become intoxicated. Meghan's friend insists that soda being the only common ingredient it is responsible for the intoxication. This (02) _____ (a. observation; b. hypothesis; c. theory) seems ludicrous to Meghan so she asks her friend to test it "scientifically." He agrees and prepares a drink made of yet a third mixture, vodka and soda. This proposed test would be an example of a (an) (03) _____ (a. hypothesis; b. theory; c. experiment). Of course the test is successful, as another partygoer succumbs, this time in the name of science. Meghan correctly asserts that this procedure (04) _____ (a. does; b. does not) represent an application of scientific method. Because science (05) _____ (a. does; b. does not) guarantee a correct answer to a question.

For questions 06 through 15 please refer to the seismograms, map and travel time curves for an earthquake in the San Francisco Bay Region.

Questions 06 through 15: Multiple Choice

06. Which seismogram(s) has (have) the greatest S-P interval?
    a. Lick Observatory
    b. Palo Alto
    c. San Francisco
    d. Lick Observatory and Palo Alto
    e. San Francisco and Palo Alto

07. Which seismogram(s) has (have) the shortest S-P interval?
    a. Lick Observatory
    b. Palo Alto
    c. San Francisco
    d. Lick Observatory and Palo Alto
    e. San Francisco and Palo Alto

08. Which seismic recording station(s) is (are) the farthest to the epicenter?
    a. Lick Observatory
    b. Palo Alto
    c. San Francisco
    d. Lick Observatory and Palo Alto
    e. San Francisco and Palo Alto

09. Which seismic recording station(s) is (are) the closest to the epicenter?
    a. Lick Observatory
    b. Palo Alto
    c. San Francisco
    d. Lick Observatory and Palo Alto
    e. San Francisco and Palo Alto

10. What geologic factors of the crust between the epicenter and your recording stations might effect the speed of the seismic waves?
    a. density
    b. rigidity
    c. both a. and b.
    d. none of the above

11. Which fault ruptured to generate the earthquake recorded by these seismic recording stations?
    a. San Andreas Fault
    b. Hayward Fault
    c. Calaveras Fault
    d. None of the above

12. Which <u>LOCATION</u> on the map was closest to the earthquake epicenter?
    a. Berkeley
    b. Lick Observatory
    c. San Francisco
    d. Oakland
    e. San Jose

13. Are these three seismograms "lined-up" with respect to time?
    Note: The minute marks do not have a specific time register marked on them.
    a. YES
    b. NO

14. Of the choices given which one most closely approximates the S-P interval for the seismogram recorded at the Lick Observatory station?
    a. 74 sec
    b. 4.7 sec
    c. 7.4 sec
    d. 47 sec

15. Of the choices given which one most closely approximates the Focal Distance for the seismogram recorded at the Lick Observatory station?
    a. 3.8 km
    b. 4.7 km
    c. 38 km
    d. 10.5 km

please turn to the next page and continue

For questions 16 through 25 please refer to the Seismicity map of the Central American and Caribbean Regions.

Questions 16 through 25: Multiple Choice

16. Given the pattern of seismicity what type of plate boundary exists between the Coccos and Caribbean plates?
    a. Divergent
    b. Convergent- subduction zone setting
    c. Convergent- continental collision setting
    d. Transform

17. The Coccos Plate is west of the plate boundary, considering your answer to question 16, what is the direction of relative plate motion for the Coccos Plate?
    a. Northeast
    b. Southwest
    c. Northwest
    d. Southeast

18. The Caribean Plate is east of the plate boundary, considering your answer to question 16, what is the direction of its relative plate motion?
    a. Northeast
    b. Southwest
    c. Northwest
    d. Southeast

19. Is it possible for earthquakes for the boundary mentioned in question 16 to be as strong as the1964 Good Friday Earthquake in Anchorage Alaska?
    a. YES
    b. NO
    c. Only on the third Friday of every month.

20. Given your above answers which of the following statements is <u>TRUE</u> for the plate boundary between the Coccos and Caribbean Plate?
    a. For this type of plate boundary, volcanism would be expected to be formed from mostly intermediate magmas forming a volcanic arc.
    b. This type of plate boundary would be characterized by basaltic (mafic) volcanism creating a mid-ocean ridge.
    c. This area would be dominated by "hot-spot" volcanism yielding either mafic or silicic volcanism.
    d. There would be no volcanism at this type of plate boundary.

21. Given your above answers which of the following statements is <u>TRUE</u> for the plate boundary between the Coccos and Caribbean Plate?
    a. This type of plate boundary is characterized by the strongest earthquakes.
    b. This type of plate boundary is characterized by only moderate earthquakes..
    c. This is the same type of plate boundary that we see in the San Francisco Bay region.
    d. Both b and c are correct.
    e. <u>None</u> of the above statements are true.

22. Which of the following statements is TRUE?
    a. The Cocos Plate is subducting to the Northeast under the Caribbean Plate.
    b. The Caribbean Plate is subducting to the Southwest under the Cocos Plate..
    c. The Cocos Plate is moving to the Northwest relative to the Caribbean Plate.
    d. The Caribbean Plate is moving to the Northwest relative to the Cocos Plate.
    e. None of the above statements are true.

23. Given your previous answers, and seismicity patterns from the map, what type of boundary exists between the Coccos and Pacific plates?
    a. Divergent
    b. Convergent- subduction zone setting
    c. Convergent- continental collision setting
    d. Transform

24. Which of the following statements is (are) TRUE for the plate boundary mentioned in question 23?
    a. Volcanism in this region may be explosive.
    b. The most powerful kinds of earthquakes may occur at this type of plate boundary.
    c. Only nonexplosive volcanism can occur in this region.
    d. Both a. and b. are true.
    e. None of the above statements are true.

25. Given your answer to question 24, which of the following statements is TRUE?
    a. Oceanic crust is consumed at this type of plate boundary.
    b. Oceanic crust is formed at this type of plate boundary.
    c. Oceanic crust is neither formed or consumed at this type of boundary.

For questions 26 through 30 please refer to the magnetic lineations of the seafloor on the page entitled "Plate Motion."

Questions 26 through 30: Matching: For each of the following statements indicate the lineation pattern that best matches.

26. Ridge with fastest rate of seafloor spreading.
27. Ridge with slowest rate of seafloor spreading.
28. Ridge with moderate rate of seafloor spreading.
29. Magnetic record showing largest amount of seafloor.
30. Magnetic record showing least amount of seafloor.

A. South Atlantic
B. North Pacific
C. Pacific Antarctic

For questions 31 through 35 please refer to the Hawaiian Hot Spot Track map on the page entitled "Plate Motion."

Questions 31 through 35: Multiple Choice

31. What is the current direction of motion for the Pacific Plate over the Hawaiian Hot Spot?
    a. NW
    b. SE
    c. NE
    d. SW

32. The Hot Spot Track indicates that more than 43 Ma (Million Years), the direction of the Pacific Plate motion was more to the
    a. W
    b. E
    c. N
    d. S

33. Was the rate of plate motion faster or slower than today, more than 40 Ma?
    a. SLOWER b. FASTER

34. Has the rate of plate motion been constant over the last 40 Ma?
    a. YES b. NO

35. Are the rocks of the Hawaiian ridge formed over the hot spot older than surrounding seafloor?
    a. YES b. NO

For questions 36 through 45 please refer to maps of volcanic constructs

Questions 36 through 45: Matching: Match each statement to the volcanic construct that best fits.

36. Cinder cone.
37. Composite cone.
38. Shield Volcano.
39. Lava Plateau.
40. Dome volcano.
41. Subduction Zone.
42. Hot Spot.
43. Flood Basalt.
44. Explosive eruptions.
45. Flood Basalt.

A. Kamakaia Hills
B. Mount St. Helens
C. Mauna Loa Volcano
D. None of the constructs matches the statement.

For questions 46 through 50 please refer to the topographic map of Logan Pass, Montana.

Questions 46 through 59: True/False
For each of the following statements indicate whether it is true or false. Note: True is T(a) on your Scantron form and False is F(b).

46. Siyeh Creek in the lower canyon generally flows to the North in this area.

47. The lower canyon through which Siyeh Creek flows (see location C8 on the map) was cut by stream erosion.

48. An alluvial fan is forming below the upper canyon of Siyeh Creek (see location D6 on the map).

49. The upper canyon through which Siyeh Creek flows through Preston Park (see location G4 on the map) was cut by stream erosion.

50. The higher elevations of this region were sculpted by glaciation.