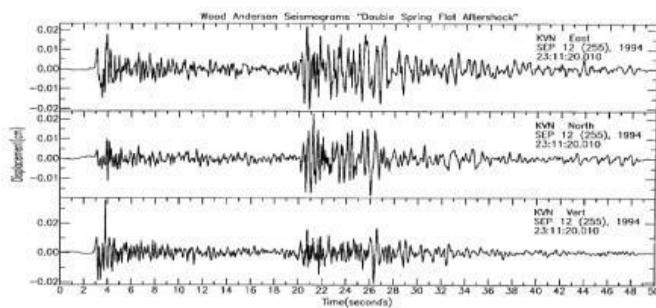


Directions: Choose the letter of the correct answer.

1. Earth is the only planet to be named in English. The word "Earth" is an old English word for \_\_\_\_\_  
**A. Land**      **B. Soil**      **C. Island**      **D. Water**
2. It is the transition boundary between the Earth's crust and the mantle.  
**A. Lehman**      **B. Gutenberg**      **C. Moho**      **D. LVZ**
3. Once a rock is formed, does it stay the same rock forever?  
**A. Yes! Rock does not undergo any changes**      **C. Sometimes**  
**B. No! Rocks are continually changed by many processes**      **D. None of these**
4. Who is the proponent of the continental drift theory?  
**A. Alfred Wegener**      **B. Harry Hess**      **C. Sir Isaac Newton**      **D. Harold Jeffreys**



For questions 5 and 6, refer to the figure above:

5. You were provided with data showing the arrival time of the P and S waves recorded from three seismic stations. Which of these can you possibly determine?  
**A. the intensity of the earthquake**      **C. the location of the epicenter**  
**B. the distance to the earthquake**      **D. the damage at the focus**
6. From the seismogram, the distance to the epicenter can be determined by measuring  
**A. the difference in the arrival times of the P and S waves**  
**B. the ratio of the amplitude of the largest P and S waves**  
**C. the arrival time of surface wave**  
**D. the speed of the surface wave**
7. What do you think is the importance of determining the epicenter of an earthquake?
  - I. Determining the location of earthquake epicenters play a vital role in laying the foundations of plate tectonics.
  - II. Plotting the position of earthquake epicenters help in conceptualizing the crustal movements.
  - III. Locating earthquake epicenters will pinpoint which fault lines are active.
  - IV. Determining the location of earthquake epicenters help save lives.**A. I & II**      **B. II & III**      **C. III & IV**      **D. I, II & III**
8. If you visit a place in the Pacific known to be along converging plates, which of these should you not expect to see?  
**A. active volcanoes**      **C. rift valleys**  
**B. mountain ranges**      **D. volcanic islands**

9. You are an oceanographer and want to map the ocean floor on the east coast of the Philippines. As you do your study, you noticed that there is a portion of the ocean floor which is relatively much deeper than the rest. What most likely is that deeper part?

- A. linear sea
- B. oceanic ridge
- C. rift valley
- D. trench

10. Alfred Wegener is a German scientist who hypothesized that the Earth was once made up of a single large landmass called Pangaea. Which of the following theories did Wegener propose?

- A. Seafloor Spreading Theory**
- B. Continental Shift Theory**
- C. Continental Drift Theory**
- D. Plate Tectonics**

11. If you are a cartographer, what will give you an idea that the continents were once joined?

- A. Size of the Atlantic Ocean**
- B. Position of the south pole**
- C. Shape of the continents**
- D. Ocean depth**

12. Which observation was NOT instrumental in formulating the hypothesis of seafloor spreading?

**A. Depth of the ocean**      **C. Magnetization of the oceanic crust**  
**B. Thickness of seafloor sediments**      **D. The location of glacial deposits**

13. As a new seafloor is formed at the mid-ocean ridge, the old seafloor farthest from the ridge is destroyed. Which of the stated processes describes how the oceanic crust plunges into the Earth and is destroyed at the mantle?

A. Convection      B. Construction      C. Diversions      D. Subduction

14. When locating the epicenter of an earthquake, you need to determine the time interval between the arrival of the Primary and secondary waves in how many different locations?

**A** One      **B** Two      **C** Three      **D** Four

15. Right in the middle of an island, you can find a rift valley. What type of plate boundary exists on that island?

**A** convergent      **B** divergent      **C** transform fault      **D** none of these

16. What do you call the outermost and the thinnest layer of the earth that is being explored by the miners?

A. crust      B. mantle      C. inner core      D. outer core

17. You were asked to locate the epicenter of a recent earthquake. Which correct sequence of events should you follow?

- i. Determine the difference in the arrival time of S and P wave recorded from each of the seismological stations.
- ii. Determine the distance of the epicenter from the station.
- iii. Obtain data from three different seismological stations.
- iv. Use the triangulation method to locate the center.

18. What do you expect to find farthest to a trench?

A. Hot spot      B. Volcanic arcs      C. Subduction zone      D. Ocean ridge

18. What do you expect to find at a mid-ocean ridge?

A. thick accumulation of sediments      C. relatively young rocks  
B. very ancient rocks      D. reverse fault

20. Crustal Plate A is moving away from Crustal Plate B. What is the expected average rate of change in position between A and B?

A. a few centimeters per year      C. a few millimeters per century  
B. a few meters per month      D. a few millimeters per day

21. Which plate boundary is formed between the Philippine Plate and the Eurasian Plate?

A. convergent      B. divergent      C. transform fault      D. all of the above

22. Which of these is **false** about crustal plates:

A. have the same thickness everywhere      C. thickest in the mountain region  
B. include the crust and upper mantle      D. varies in thickness

23. Which of this is **NOT** true about the Philippine Islands?

A. Most are part of the Philippine Mobile Belt except for Palawan, Mindoro, and Zamboanga.  
B. formed because of the convergence of the Philippine Plate and the Pacific Plate.  
C. Originated geologically in an oceanic-oceanic convergence.  
D. Some are products of subduction process.

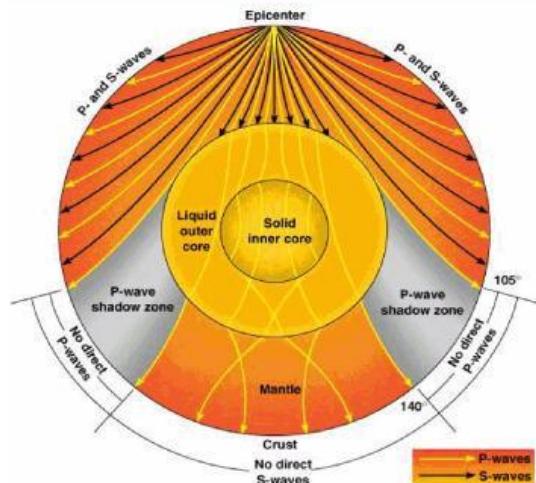
For questions 24 and 25, refer to the figure at the right

24. An S-wave shadow zone is formed as seismic waves travel through the Earth's body. Which of the following statements does this S-wave shadow zone indicate?

A. The inner core is liquid.      C. The inner core is solid.  
B. The outer core is liquid.      D. The mantle is solid.

25. Why are there no P-waves or S-waves received in the P-wave shadow zone?

A. P-waves are absorbed, and S-waves are refracted by Earth's outer core.  
B. P-waves are refracted, and S-waves are absorbed by Earth's outer core.  
C. Both the P-waves and S-waves are refracted by Earth's outer core.  
D. Both the P-waves and S-waves are absorbed by Earth's outer core.



26. What makes up the lithosphere?

A. Oceanic crust and continental crust      C. Continental crust  
B. Crust and the upper mantle      D. Upper mantle

27. Miners dig into the Earth in search for precious rocks and minerals. In which layer is the deepest explorations made by miners?

A. Crust      B. Inner core      C. Mantle      D. Outer core

28. How do you compare the densities of the Earth's crust, mantle and core?

A. The mantle is less dense than the core but denser than the crust.  
B. The mantle is denser than the core but less dense than the crust.  
C. The mantle is less dense than both the core and the crust.  
D. The mantle is denser than both the core and the crust.

29. The movement of the lithospheric plates is facilitated by a soft, weak and plastic-like layer. Which of the following layers is described in the statement?

A. Asthenosphere    B. Mesosphere    C. Lithosphere    D. Outer Core

30. In 1912, Alfred Wegener proposed a theory that the Earth is once a single landmass. What is the name of the Mesozoic supercontinent that consisted of all the present continents?

A. Eurasia    B. Laurasia    C. Pangaea    D. Gondwanaland

31. What does the presence of Mesosaurus fossils tell us about the initial locations and positions of South America, Africa, and Antarctica?

A. It tells us that these continents were not connected before, since this kind of animal cannot swim across the vast ocean.  
B. It tells us that these continents were not connected before, since this kind of animal can swim across the vast ocean.  
C. It tells us that these continents were connected before, since this kind of animal cannot swim across the vast ocean.  
D. It tells us that these continents were connected before, since this kind of animal can swim across the vast ocean.

32. As the ocean seafloor spreads, the newly formed floor will adapt a specific magnetic signature according to the Earth's magnetic pole at that time. What do we call this phenomenon?

A. Magnetic Reversals    C. Reversed Polarity  
B. Normal Polarity    D. All of the above

33. Which Ocean has a ring of volcanoes around it?

A. Arctic    B. Atlantic    C. Indian    D. Pacific

34. All of these have volcanoes and experience earthquake activity EXCEPT \_\_\_\_\_.

A. Australia    B. Japan    C. Mexico    D. Philippines

35. How do you describe the location of earthquake epicenters, active volcanoes and moving plates in the pacific ring of fire?

A. They are all over the place.    C. They are situated in one location.  
B. They are concentrated in one area.    D. They are strategically plotted in clusters.

36. Which of the following happens when plates diverge from each other?

A. The crust is destroyed.  
B. New crust is produced because the magma rises and then cools off and turns into solid.  
C. Earth's size changes because mountains are added on the Earth's surface.  
D. The mantle rises.

37. How do the plates move when we feel that the ground is shaking?

A. toward each other    C. slide past each other  
B. away from each other    D. all of the above

38. Which of the following can you infer from the continuous movement of the lithospheric plates over the asthenosphere?

A. All the continents will cease to exist.  
B. All the volcanoes in the Philippines will become inactive.  
C. The continents will not be in the same place as they are now.  
D. The islands of the Philippines will become scattered all over the world.

39. If all the inner layers of the Earth are firm solid, what could have happened to Pangaea?

- A. It remained as a supercontinent.
- B. It would have become as it is today.
- C. It would have disappeared in the ocean.
- D. It would have covered the whole world.

40. Why does the oceanic crust sink beneath the continental crust at the subduction zone?

- A. The oceanic crust has a greater density.
- B. The oceanic crust is pushed from the ridge.
- C. The continental crust has a denser composition.
- D. The oceanic crust is pulled downward by Earth's magnetic field.

41. The lithospheric plates are believed to be moving slowly. What is the driving force that facilitates this movement?

- A. gravitational force of the moon
- B. magnetic force at the poles
- C. convection current in the mantle
- D. the force of the atmosphere

42. What is the role of the mid-ocean ridge in the movement of lithospheric plates?

- A. The mid-ocean ridge serves as the origin of lithospheric movement.
- B. An area in the middle of the ocean where new ocean floor is formed.
- C. Seafloor spreading takes place along a plate boundary.
- D. Uplifts the ocean floor when convection current rises.

43. Most transform fault boundaries are found in the oceans; a few are on the continents. An example of this type is the San Andreas fault which is in \_\_\_\_\_.

- A. Marikina, Philippines
- B. California, USA
- C. Kyoto, Japan
- D. Paris, France

44. Where is the ring of fire located?

- A. Philippine plate
- B. Pacific plate
- C. Japan plate
- D. Eurasian plate

45. The theory of plate tectonics helps explain which of the following?

- A. the symbiotic relationship between earthworms and bacteria
- B. the extinction of the dinosaurs
- C. the movement of continents and the occurrence of volcanoes and earthquakes
- D. the different fossils found all over the Earth

46. Transform faults like the west valley fault that is found in Metro Manila, occur where?

- A. on boundaries where one plate is subducting under the other
- B. on boundaries where plates are sliding past each other
- C. on boundaries where plates are spreading apart
- D. on boundaries where plates are colliding

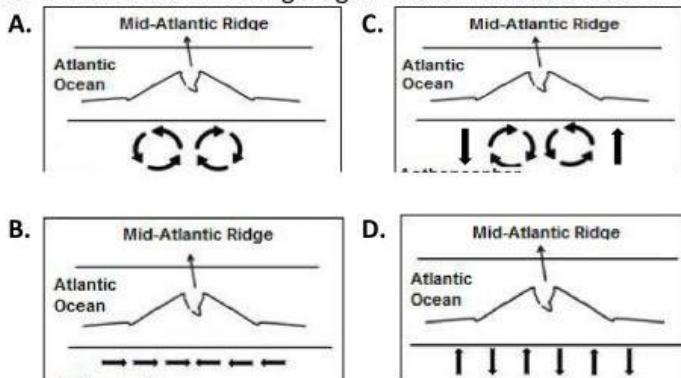
47. What process is building Mount Apo, the tallest mountain in the Philippines?

- A. two oceanic plates colliding
- B. seafloor spreading
- C. two continental plates colliding
- D. the creation of rift valleys

48. Who were the two scientists who paved way to the modern theory of plate tectonics?

- A. Charles Darwin and James Hutton
- B. Harry Hess and Alfred Wegener
- C. John Butler and Arthur Smite
- D. Alfred Wegener and Harold Jeffreys

49. Which of the following diagrams best illustrates the convection occurring in the mantle?



50. During the 1960s, scientists were already equipped with gadgets needed to explore the deep ocean. What discovery about the ocean floor is associated with the seafloor spreading?

- A. Mountains are denser than the mantle.
- B. The rotational poles of the Earth have migrated.
- C. The crust of the continents is denser than the crust of the ocean.
- D. The crust of the ocean is very young relative to the age of the crust of the continents.

51. If the Atlantic Ocean is widening at a rate of 3 cm per year, how far (in kilometers) will it spread in a million years?

- A. 3 kilometers
- B. 30 kilometers
- C. 300 kilometers
- D. 3000 kilometers

52. Which of the following increases with distance from a mid-ocean ridge?

- A. the age of oceanic lithosphere
- B. the thickness of the lithosphere
- C. the depth to the sea floor
- D. all of the above

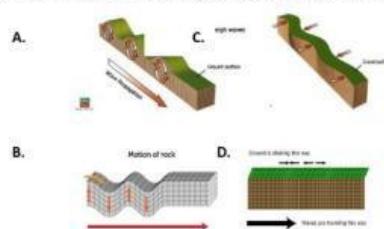
53. What type of plate boundary is this?

- A. Convergent Boundary
- B. Divergent Boundary
- C. Transform Boundary
- D. All of the above



For questions 54-57, refer to the pictures below: the following pictures with the types of waves

- 54. Primary wave
- 55. Secondary wave
- 56. Love wave
- 57. Rayleigh wave



58. How does the new seafloor form at the mid-ocean ridge? What is the correct sequence of the event?

I. As this material flows sideways, it creates a crack in the crust where magma will flow out.

II. Hot, less dense material below the Earth's crust rises towards the mid-ocean ridge.

III. This magma cools down and becomes the new seafloor.

A. I, II, III

C. II, I, III

B. II, III, I

D. III, II, I

59. Is the Earth getting larger and wider when plates drift away from each other? Why?

A. Yes. If there is the production of a new seafloor in the mid-ocean ridge, there is a destruction of an old seafloor at subduction zones.

B. Yes. If there is no production of a new seafloor in the mid-ocean ridge, there is no destruction of an old seafloor at subduction zones.

C. No. If there is the production of a new seafloor in the mid-ocean ridge, there is a destruction of an old seafloor at subduction zones.

D. No. If there is no production of a new seafloor at the mid-ocean ridge, then there is no destruction of old seafloor at subduction zones.

60. Will there be a possibility that the current location of a continent would be different 100 years from now?

A. Yes, if the continents continue to move.

B. No, if the continents continue to move.

C. Yes, if the continents does not continue to move.

D. No, if the continents do not continue to move