Name: _____ Date: _____

The Internal Process Questions

Answers

1. Inner Core

2. Asthenosphere

3. Oceanic Crust

4. Outer Core

5. Upper Mantle

6. Continental Crust

7. Lower Mantle

8. **Mohorovicic Discontinuity**

Mohorovicic discontinuity is the boundary between the Earth's crust and the mantle. It is also termed as Moho and is named after the person discovered, Andrija Mohorovicic, a Croatian seismologist. On an average, Moho is 8 kms beneath the Ocean floor and 35 kms beaneath the typical continental crusts. The Moho is the place where the seismic P-waves experiences sudden increase in velocity because of the change in composition from lighter basalts in the crust to denser silicates ((peroidotite, dunite) in the mantle.

9. **Lithosphere**

Lithossphere is defined as the rigid, outermost shell of a rocky planet. The Lithosphere of Earth consists of the crust and the upper mantle. The two types of Earth's lithosphere are Oceanic lithosphere and Continental lithosphere. The Oceanic lithosphere mainly comprises of mafic (which is rich in magnesium and iron) crust and ultramafic (over 90% mafic) mantle and is denser than continental lithosphere. The continental lithosphere mainly consists of granitic rock and it is the layer of igneous, sedimentary rock that forms the continents and the continental shelves.

10-12. **Mantle**

The mantle is the portion between the Earth's crust and the outer core. The mantle is the largest layer of the Earth and makes up-to 84% of the Earth's volume. It is predominantly solid and composed of silicates rich in magnesium and iron. The mantle is about 1800 miles deep out of which the inner mantle is 200 to 250 miles thick and the rest is inner mantle.

13-14. **Alfred Wegener**

Alfred Wegener was a German polar researcher, geophysicist and meteorologist. He was the one who proposed the theory of continental drift. In 1912, he proposed a hypothesis named "Continental drift theory" which states that the continents were once joined together as a single big land mass (termed as Pangea or super-continent) and started to drift slowly around the earth.

15-17 **Evidences**

1. Jig-saw puzzles pieces
   The various landmasses of the Earth are seemed to fit together like in a jigsaw puzzle. Especially, the Continental masses of the South America fit closely to Africa. Europe, Antarctica, Australia, India and Madagascar fits perfectly next to the tip of Southern Africa.
2. Fossil Evidence
   The plant and animal fossils found between different land masses miles apart supports the existence of continental drift theory. The fossils of Mesosaurus, a freshwater reptile which were found both in Brazil and South Africa, are one of the example for this fossil presence in different land masses
3. Rock Evidence
   Huge belts of rocks found in Africa and South America were identical. Not only were they same, but they were of same age, thickness and type. This is only possible if the continents were put together. Also, the Appalachian Mountains that disappear off the coast of Newfoundland match mountains in the British Isles and Scandinavia which are of the same age and structure.

18. The plate tectonics theory explains about the movement of the Earth's plates in the lithosphere while the continental theory explain about the drifting of the land masses and the formation of continents from a single large land mass. The major difference is the fact that the plate tectonics describes the movement of plates which may be continental or oceanic or both while the continental drift theory explains only about the movement of continents.

19. African Plate - I

20. North American Plate - D

21. Nazca Plate - F

22. Pacific Plate - B

23. Eurasian Plate - J

24. South American Plate - G

25. Indo-Australian Plate - L

26. Cocos Plate - C

27-34.

The Juan de Fuca and North American plates – Convergent, Oceanic crust

The North American and Eurasian plates – Divergent, Ocean from Ocean

The pacific and North American plates (in South California) – Transform, continent from ocean (continental crust)

The Indian and Eurasian plates – Convergent, continent from continent

35-42.

The Juan de Fuca and North American plates – Oceanic volcanic arc, the Cascade Range and the Cascade Volcanic Arc

The North American and Eurasian plates – Oceanic ridge, Mid-Atlantic ridge and Gakkel Ridge

The pacific and North American plates (in South California) – continental transform fault, the San Andreas Fault

The Indian and Eurasian plates – Orogenic belt, The Tibetan Plateau and the Himalaya Mountains

43. The deepest part of the ocean on the Earth is termed as the Challenger Deep. It is located in the western part of the Pacific Ocean near the southern end of the Mariana Trench. Challenger Deep is approximately 36,200 feet deep.

44-45. The challenger deep is created by the subduction of the Pacific plate and the Philippine plate. It is formed because of the collision between these two plates that forced the heavier Pacific plate down towards the mantle and the edge of lighter Philippine plate was dragged down which resulted in the formation of a steep walled trench.

46. California is on the border of 2 plates forming the San Andreas faults and making the sate prone to earthquakes. The 2 plates are the North American Plate and the Pacific Plate.

47. Continental Crust - C

48. Oceanic Crust – D

49. Trench – B

50. Lithosphere – A

51. Asthenosphere - E

52. Convergent movement of plates

53. Ridges/Summit/Peak/Zenith/Acme/Apex

54. Mountains are either formed by:

1. the collision of tectonic plates creating volcanoes that erupts and forms mountains. These are called as volcanic mountains
2. the folding and buckling of plates due to subduction forms fold mountain ranges
3. the tilting or raising of a fault block forms block mountains

55. Destructive continental margin

56. Subduction

57-62. **(Assumption – age is converted from million years to years as the same is not clear in the question)**

Locations	Measured Distance on Map (in inches)	Actual Distance (in inches)	Age Difference (in years)	Rate of Plate Movement (inches per year)
Molokai to Hawaii	2.7	11340000	1900000	5.97
Kauai to Oahu	1.4	5880000	1400000	4.20

63-68.

Horizontal Tensional Stress – Normal Faults

Horizontal Compressional Stress – Reverse Faults

Horizontal Shear Stress – Strike Slip Faults

69. Along zones of crustal weakness (B)

70-71. San Andreas Fault, transform boundary (between North American and Pacific plates)

72. Can affect bodies of water such as lakes – D

73. Faster of the 2 body waves – C

74. Surface wave that does not propagate through water - A

75. Transverse waves - B