

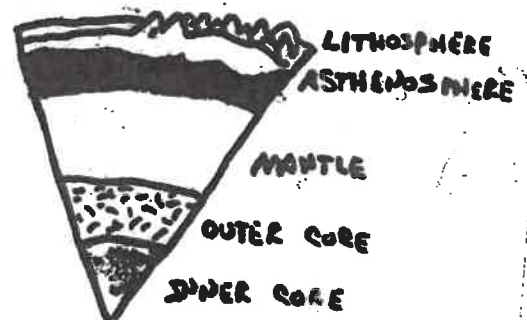
## Unit 3 Part A : Earth's Interior Test

1. Which 2 layers of the Earth's interior are separated by the MOHO BOUNDARY?
  - a. Rigid Mantle and Plastic Mantle
  - b. Outer Core and Stiffer Mantle
  - c. Stiffer Mantle and Asthenosphere
  - d. Crust and Rigid Mantle

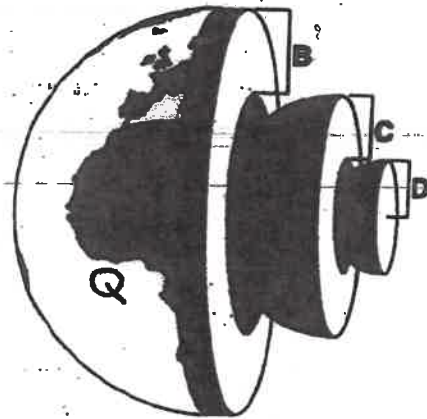
2. A model of Earth's internal structure is shown below.

Analysis of what type of data led to the development of this model?

- a. Seismic Waves
- b. Depth of Oceans
- c. Electromagnetic Radiation
- d. Isobar Gradients

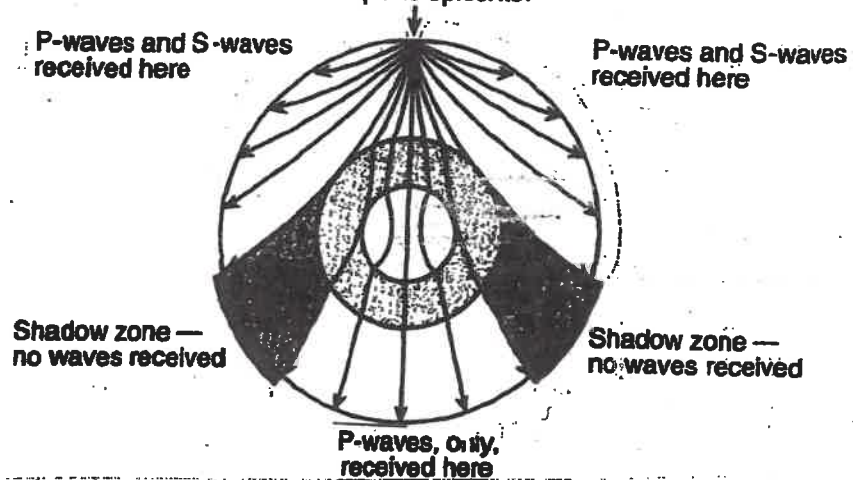


3. Base your answer to the following question on the diagram below. Letters B, C, and D represent layers of Earth. What letter represents the Earth's mantle?



- a. Q
- b. B
- c. C
- d. D

4. Look at the cross section below. It shows the paths of seismic waves traveling from an earthquake epicenter through the different layers of the Earth. No P-Waves or S-Waves are received in the shadow zone because ..

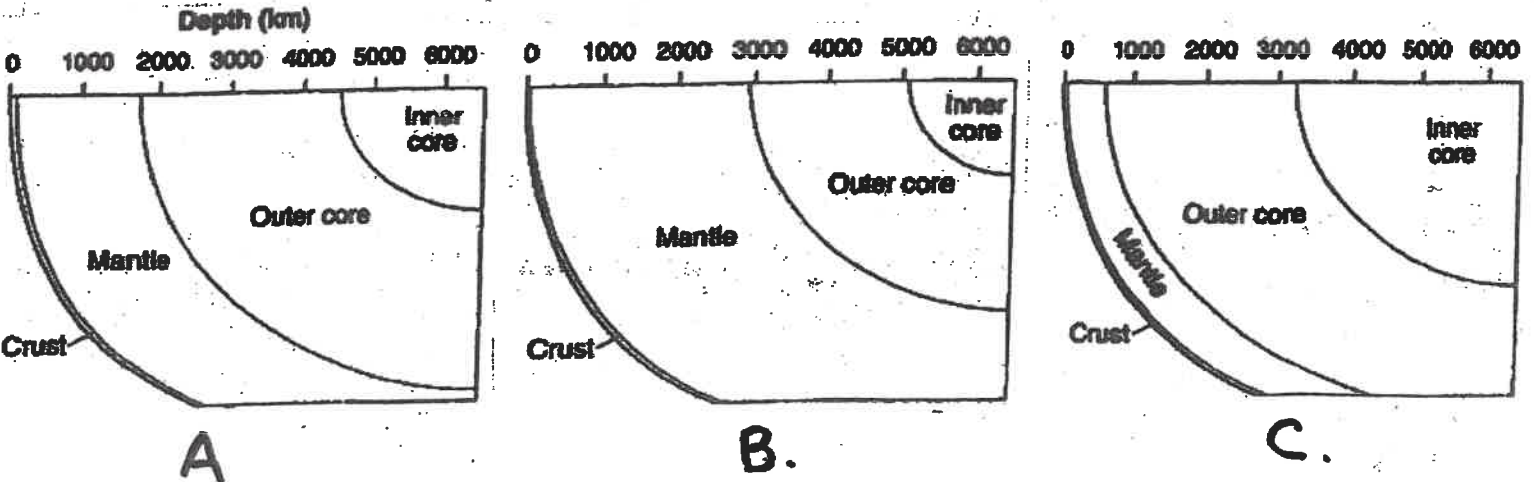


- P-Waves are absorbed and S-Waves are refracted by the outer core
- P-Waves are refracted and S-Waves are absorbed by the outer core
- Both P and S-Waves are refracted by the Earth's outer core.
- Both P and S-Waves are absorbed by the Earth's outer core.

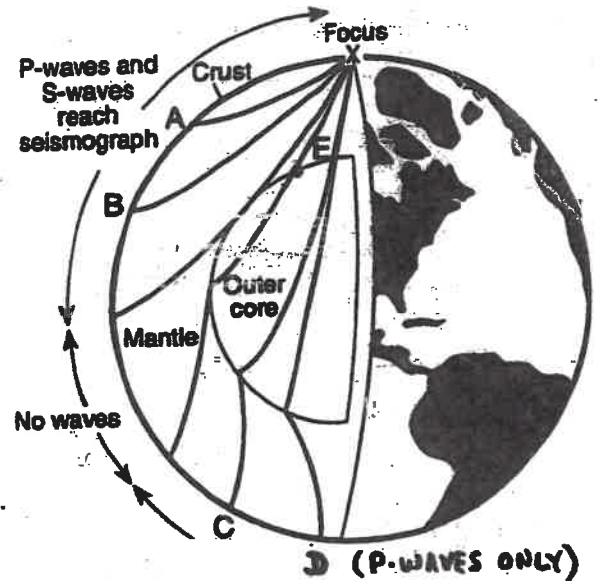
5. Which part of the Earth's Interior is inferred to have convection currents that cause tectonic plates to move?

- Rigid Mantle
- Asthenosphere
- Outer Core
- Inner Core

6. Which cross section best shows the inferred thickness of the Earth's interior layers that cause these different velocities?



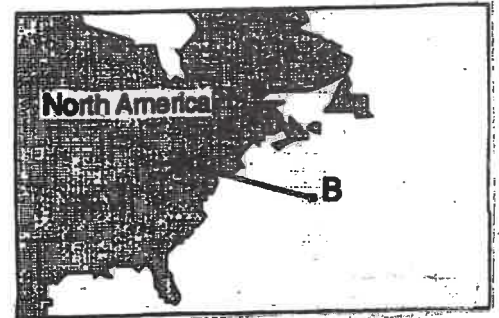
7. Look at the diagram. The paths of earthquake waves generated at point "X" are shown. A, B, C and D are seismic stations on the Earth's Surface and E is in the Earth's interior.



Both P and S-Waves were received at stations A and B.  
 Only P-Waves were received at stations C and D.  
 Which statement best explains why this occurred?

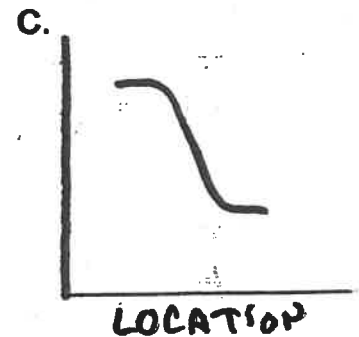
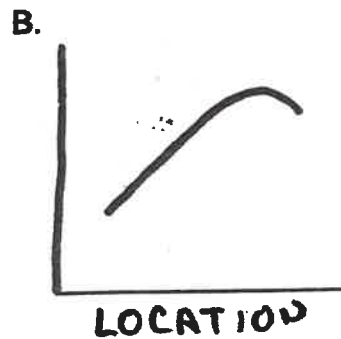
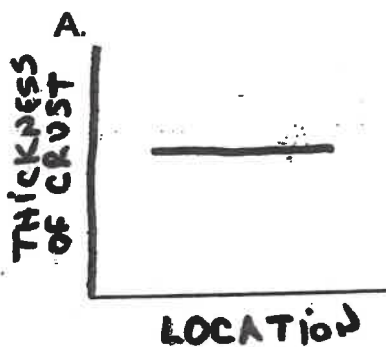
- S-Waves are weaker than P-Waves
  - S-Waves are faster than P-Waves
  - The liquid outer core absorbs the S-Waves so they can't reach C and D.
  - The solid outer core absorbs the S-Waves so they can reach C and D.
8. Why is the Earth's core inferred to be a liquid?
- P-Waves can pass through the outer core.
  - P-Waves can NOT pass through the outer core.
  - S-Waves can pass through the outer core
  - S-Waves can NOT pass through the other core.
9. Compared to Earth's continental crust, Earth's oceanic crust is
- Thinner and more dense
  - Thinner and less dense
  - Thicker and more dense
  - Thicker and less dense
10. Compared to Earth's oceanic crust, Earth's continental crust is
- Thinner and composed of granite
  - Thinner and composed of basalt
  - Thicker and composed of granite
  - Thicker and composed of basalt

11. On the map below, locations A and B are reference points on the Earth's surface. Crustal thickness was measured beneath a line from A to B.



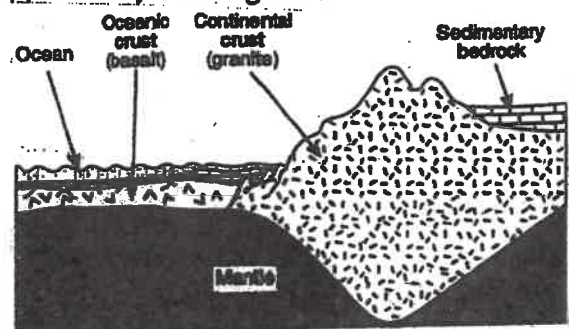
Which graph would best represent the thickness of Earth's crust from location A to location B?

Which graph would best represent the thickness of Earth's crust from location A to location B?



12. The diagram below represents a cross section of a portion of the Earth's crust.

Which statement about the Earth's crust is best supported by the diagram?



- a. The oceanic crust is thicker than the mantle.
- b. The continental crust is thicker than the oceanic crust.
- c. The continental crust is composed primarily from sedimentary rock.
- d. The crust is composed of denser rock than the mantle is.

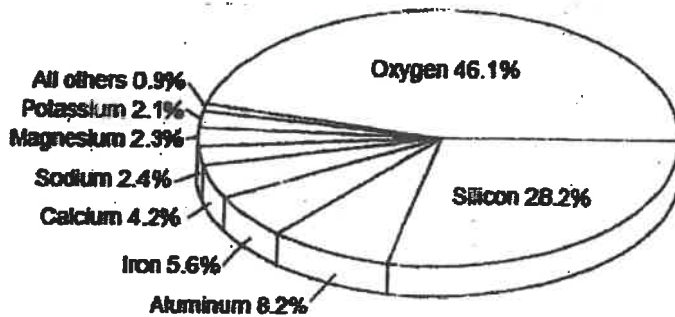
13. The core of the earth is inferred to be composed mostly of

- a. Silicon and iron
- b. Silicon and oxygen
- c. Iron and lead
- d. Iron and nickel

14. The observed difference in density between continental crust and oceanic crust is most likely due to differences in their

- a. Composition (What it's made of)
- b. Porosity
- c. Thickness
- d. Rate of cooling

15. The pie graph below represents the composition, in percent by mass, of the chemical elements found in an Earth layer.



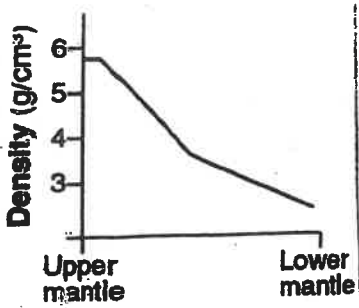
The composition of the crust includes what 2 main ingredients?

- a. Aluminum and Iron
- b. Iron and Nickel
- c. Oxygen and Silicon
- d. Oxygen and Sodium

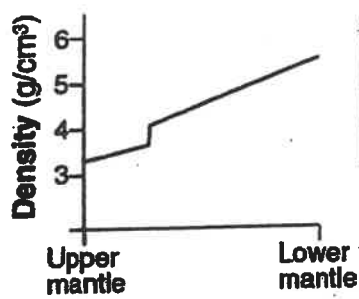
16. What happens to the density and temperature of rock within Earth's interior as depth increases?

- a. Density decreases and temperature decrease
- b. Density decreases and temperature increases
- c. Density increases and temperature increases
- d. Density increases and temperature decreases

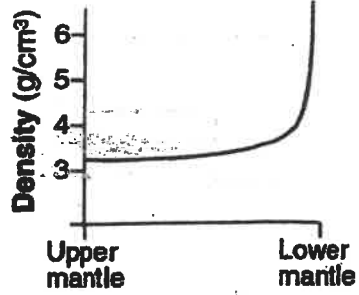
17. Which graph best shows the inferred density of Earth's interior as depth increases from the upper mantle to the lower mantle?



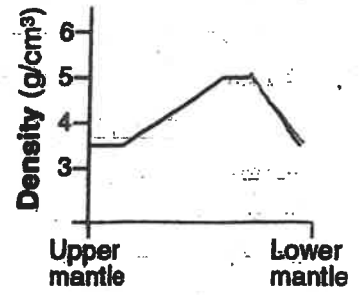
A.



B.

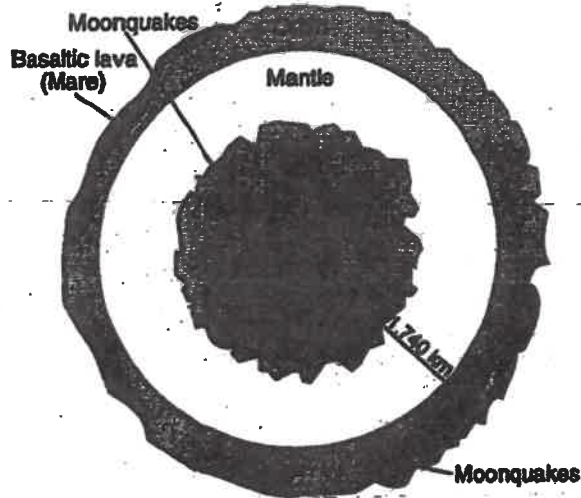


C.



D.

18. Base your answer to the following question on the information and cross section below. The cross section represents a possible model of the Moon's interior.



Seismographs left on the Moon by astronauts have provided enough data to develop a model of the Moon's interior. Scientists believe that the Moon has a layered interior and that its crustal thickness varies greatly from one side of the Moon to the other.

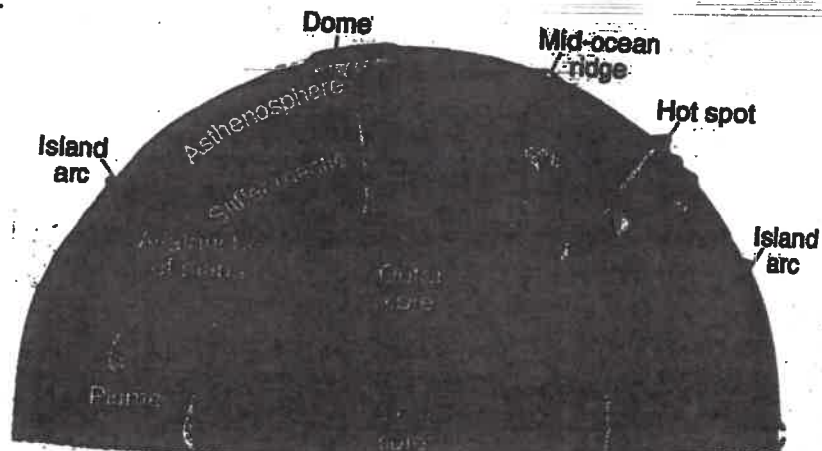
If the pressure, temperature, and density patterns of the Moon's interior are similar to those of Earth's interior, which statement best describes the Moon's characteristics?

- a. Pressure, temperature, and density all increase with depth.
- b. Pressure, increases with depth, but temperature and density remain the same.
- c. Pressure and temperature increase with depth, but density remains the same
- d. Pressure, temperature, and density remain the same at all depths.

19. The source of energy for the high temperatures found deep within the Earth is

- a. Tidal friction
- b. Incoming solar radiation
- c. Decay of radioactive materials
- d. Meteorite bombardment of the Earth

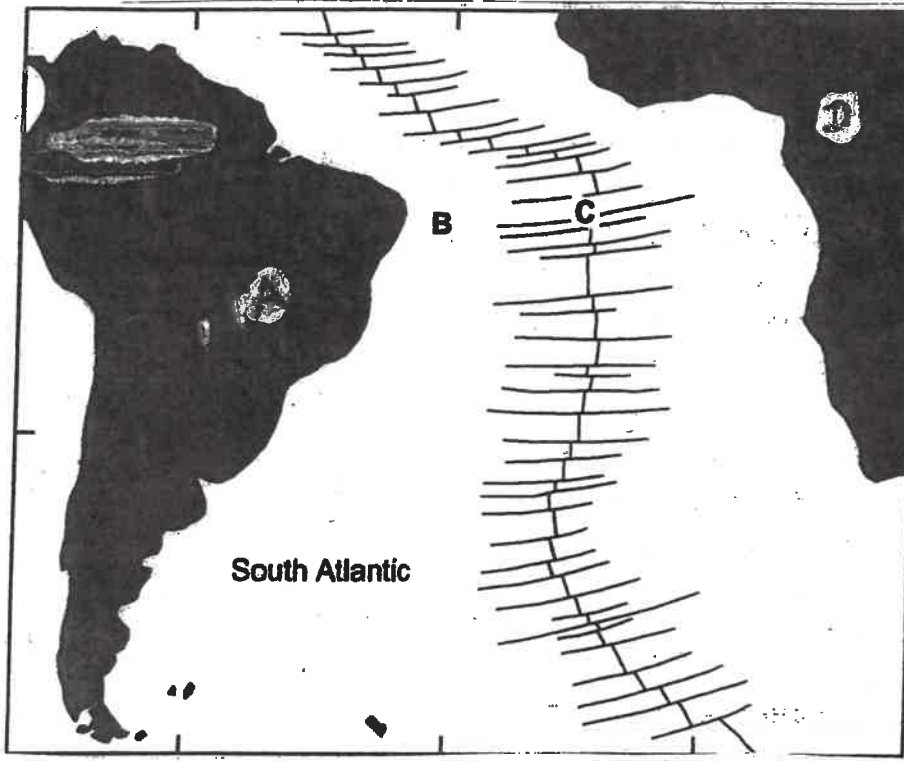
20. Research of mantle hot spots indicates that mantle plumes form in a variety of sizes and shapes. These mantle plumes range in diameter from several hundred kilometers to 1000 kilometers. Some plumes rise as blobs rather than in a continuous streak; however, most plumes are long, slender columns of hot rock slowly rising in Earth's stiffer mantle. One theory is that most plumes form at the boundary between the outer core and the stiffer mantle. They may reach Earth's surface in the center of plates or at plate boundaries, producing volcanoes or large domes.



Compared to the surrounding material, mantle plumes rise toward Earth's surface from the core-mantle boundary because they are

- a. Cooler and less dense
- b. Cooler and more dense
- c. Hotter and less dense
- d. Hotter and More Dense

21. Base your answer to the following question on the map below. The map shows the continents of Africa and South America, the ocean between them, and the ocean ridge and transform faults. Locations A and D are on the continents. Locations B and C are on the ocean floor.



Which table best shows the relative densities of the crustal bedrock at locations A, B, C, and D?

A) **Relative Densities of Crust**

More Dense	Less Dense
A, B	C, D

B) **Relative Densities of Crust**

More Dense	Less Dense
B, C	A, D

C) **Relative Densities of Crust**

More Dense	Less Dense
C, D	A, B

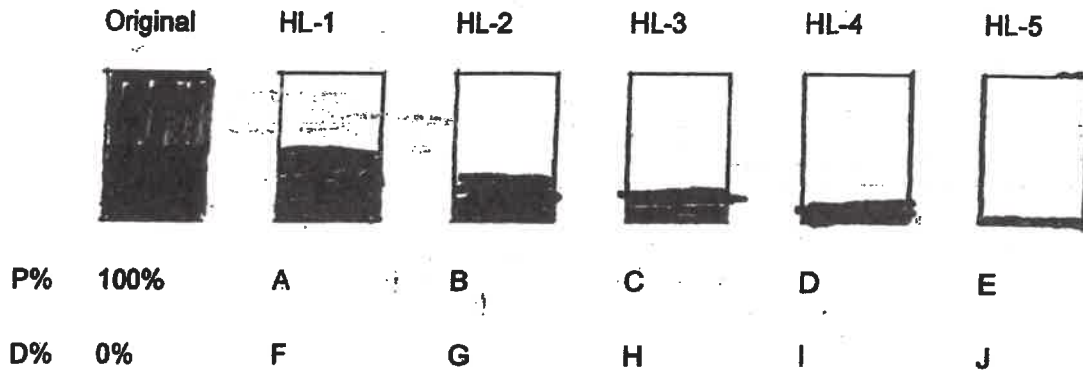
D) **Relative Densities of Crust**

More Dense	Less Dense
A, D	B, C



22. Write the correct answers on the answer document regarding radiation half lives.

This chart represents half life dating. The radioactive element we are testing is called element X and it has a half-life of 100 years. There are 100 grams of the radioactive material at its origin.



23. How old is a sample of material that has 6.25% parent material (El. X) remaining?

24. How old is a sample of material that has 75% daughter material remaining?

25. We find a sample rock that has 3.125% element X remaining.  
HOW MANY GRAMS of the original material are remaining?

26. If there is 1/16 of the original material remaining of Element X, How old is it?

27. If there is a sample that has 12.5% parent material remaining, How old is it?