## **2.3 LAB EXERCISE**

## Part A – Interior of the Earth

The following graph (Figure 2.4) displays seismic velocities (in kilometers per second) of P and S waves with depth (measured in kilometers) inside the Earth. Examine the graph closely and answer the following questions.



Figure 2.4 | Graph of seismic velocity with depth within the Earth's Interior. Author: User "Actualist" Source: Wikimedia Commons License: CC BY-SA 3.0

- Observe the velocities of the waves on the graph. Which one travels faster?
   a. P waves
   b. S waves
- 2. Inspect the P wave velocities. Where do the P wave velocities abruptly change?

a. ~20 km b. ~2,900 km c. ~5,100 km d. All of the above

- 3. In which zones do the P wave velocities appear to be steadily increasing?
  a. ~20-2,900 km
  b. ~2,900-5,100 km
  c. ~5,100-6,400 km
  d. Both a & b

4. Observe the S wave velocities. Where do the S wave velocities abruptly change?

a. ~20 km b. ~2,900 km c. ~5,100 km d. All of the above

- 5. At ~2,900 km, the S wave velocity falls to 0. Why?
  - a. S waves can't travel through solids, and this depth is where the solid inner core exists.
  - b. S waves can't travel through liquids, and this depth is where the liquid outer core exists.
  - c. S waves can't travel through solids, and this depth is where the solid mantle exists.
  - d. S waves entered the shadow zone.

Observe closely the changes in seismic wave velocity. You may add lines to your graph to denote the abrupt changes. Label each zone with the internal layers of the Earth and answer the following questions.

6. The zone from ~0-20 km represents the Earth's:

	a. crust	b. mantle	c. inner core	d. outer core
7.	The zone from $\sim\!20\text{-}2,\!900$ km represents the Earth's:			
	a. crust	b. mantle	c. inner core	d. outer core
8.	The zone from ~2,900-5,100 km represents the Earth's:			5:
	a. crust	b. mantle	c. inner core	d. outer core
9.	The zone from ~5	,100-6,400 km rep	presents the Earth's	5:

a. crust b. mantle	c. inner core d. outer core
--------------------	-----------------------------