Earth’s Interior Layers

Choose one answer per question. Circle A, B, C, or D.

1. On a cutaway of Earth, which of the four main layers lies immediately beneath the crust?
   A. Mantle
   B. Outer core
   C. Inner core
   D. Atmosphere

2. Which named part of Earth occupies the very center?
   A. Lower mantle
   B. Outer core
   C. Inner core
   D. Oceanic crust

3. In a model that begins at Earth’s center and travels straight outward, which layer follows the inner core?
   A. Crust
   B. Outer core
   C. Upper mantle
   D. Lower mantle

4. A geologist colors the rigid part of a tectonic plate. What should be colored?
   A. Only the material below the plate
   B. The crust and the entire mantle
   C. The outer core and the inner core
   D. The crust and the uppermost rigid mantle

5. Compared with typical continental crust, which description fits typical oceanic crust?
   A. Thicker and less dense
   B. Thinner and denser
   C. Thinner and less dense
   D. Thicker and denser

6. Seismic speeds change at the Mohorovičić discontinuity, also called the Moho. Which parts of Earth does it separate?

A. Crust and mantle
B. Outer and inner core
C. Mantle and outer core
D. Atmosphere and crust

7. How can rock beneath a rigid plate move over millions of years while remaining mostly solid?

A. The pressure from the crust pushes the entire mantle outward once.
B. All rock becomes liquid at the base of a plate.
C. The mantle is made mainly of air pockets.
D. The hot rock can deform and flow slowly under long-lasting stresses.

8. A chart gives approximate layer thicknesses of 30 kilometers for the crust, 2,900 for the mantle, 2,260 for the outer core, and 1,220 for the inner core. Which layer spans the most depth?

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

9. Which pair of metals best matches the standard model of the core’s main ingredients?

A. Iron and nickel
B. Aluminum and tin
C. Calcium and sodium
D. Silver and lead

10. In the geodynamo model, motion in which layer helps generate Earth’s magnetic field?

A. Uppermost rigid mantle
B. Oceanic crust
C. Solid inner core alone
D. Liquid outer core

11. The inner core is hotter than the outer core. What helps explain why the inner core remains solid?

A. The surface traps all heat outside the inner core.
B. Its density drops enough for liquid to float out.
C. Its much higher pressure raises the temperature needed to melt the material.
D. The inner core contains solid crust that cannot melt.

12. A cross section shows a P-wave path changing direction as it enters the outer core. What explains the bending?

A. The wave must hit a cliff on Earth’s surface.
B. The wave’s speed changes as it crosses into different material.
C. The wave switches into a sound wave traveling through air.
D. The earthquake moves while the wave is traveling.

13. Seismic records help locate boundaries within Earth. If the measured average density of Earth exceeds that of its surface rocks, what further inference is reasonable?

A. Everything under the surface is empty space.
B. All interior layers have the same density as the surface.
C. The atmosphere has a larger mass than the mantle.
D. Some interior material is denser than the surface rocks.

14. Which comparison correctly distinguishes a crust–mantle boundary from a lithosphere–asthenosphere boundary?

A. The first distinguishes rock types. The second distinguishes how rigidly the material behaves.
B. Both distinguish liquid metal from solid metal.
C. The first is defined by weather. The second is defined by latitude.
D. The first lies below the outer core. The second surrounds the inner core.

15. Use a simplified Earth radius of 6,370 kilometers and a core radius of 3,480 kilometers. At what depth below the surface does the outer core begin?

A. 6,370 kilometers
B. 3,480 kilometers
C. 2,890 kilometers
D. 9,850 kilometers