Advanced Geological Principles and Processes

Geology · Practice Test · 18 Questions

1. Which seismic wave is characterized by its ability to travel through solids, liquids, and gases, and causes particles to move parallel to the direction of wave propagation?

A) S-wave (Shear wave)
B) P-wave (Primary wave)
C) Love wave
D) Rayleigh wave

2. The process by which tectonic plates move apart at divergent boundaries, resulting in the formation of new oceanic crust, is known as:

A) Subduction
B) Orogenesis
C) Seafloor spreading
D) Accretion

3. Which mineral group is characterized by the presence of the $(SiO_4)^{4-}$ tetrahedral anion as its fundamental structural unit?

A) Carbonates
B) Sulfates
C) Silicates
D) Oxides

4. The principle of superposition, a fundamental concept in stratigraphy, states that in an undisturbed sequence of sedimentary rocks, the oldest layers are found:

A) At the top
B) At the bottom
C) Interspersed throughout
D) In the middle

5. Metamorphism that occurs when rocks are subjected to high temperatures and pressures deep within the Earth's crust, often associated with mountain building, is termed:

A) Contact metamorphism
B) Hydrothermal metamorphism
C) Regional metamorphism
D) Burial metamorphism

6. The radiometric dating technique that uses the decay of potassium-40 to argon-40 is particularly useful for dating:

A) Very old sedimentary rocks
B) Recent volcanic rocks and minerals
C) Metamorphic rocks formed millions of years ago
D) Fossilized organic matter

7. A fault where the hanging wall moves down relative to the footwall, typically caused by tensional stress, is called a:

A) Reverse fault
B) Thrust fault
C) Strike-slip fault
D) Normal fault

8. The process by which solid rock is broken down into smaller pieces by physical or chemical means is known as:

A) Deposition
B) Erosion
C) Weathering
D) Compaction

9. Which of the following igneous rock textures is characterized by interlocking crystals of roughly equal size, indicating slow cooling in a subterranean environment?

A) Porphyritic
B) Glassy
C) Phaneritic
D) Aphanitic

10. The phenomenon of a large, roughly circular depression in the ground caused by the collapse of land into an underground void, often associated with karst topography, is called a:

A) Caldera
B) Crater
C) Sinkhole
D) Maar

11. What is the primary process responsible for the formation of intrusive igneous rocks?

A) Rapid cooling of lava on the Earth's surface
B) Slow cooling of magma beneath the Earth's surface
C) Compaction and cementation of sediments
D) Recrystallization of existing minerals under heat and pressure

12. The Mohs Hardness Scale is a relative measure of a mineral's resistance to:

A) Chemical dissolution
B) Being scratched
C) Cleavage
D) Specific gravity

13. A hot, buoyant plume of mantle material that rises from deep within the Earth and can lead to volcanic activity in the interior of tectonic plates is known as a:

A) Subduction zone
B) Mid-ocean ridge
C) Mantle diapir
D) Hotspot

14. The geological timescale is primarily divided into eons, eras, periods, and epochs. The largest divisions of time are:

A) Periods
B) Epochs
C) Eons
D) Eras

15. Which type of metamorphic rock is characterized by the development of foliated textures, where platy or elongate minerals are aligned in parallel layers?

A) Marble
B) Quartzite
C) Slate
D) Granite

16. The process by which sediments are transformed into solid sedimentary rock is called:

A) Diagenesis
B) Metamorphism
C) Igneous intrusion
D) Volcanism

17. The Earth's magnetic field originates from the motion of molten iron and nickel in which layer of the Earth?

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

18. A body of intrusive igneous rock that cuts across existing rock layers, often forming a wall-like structure, is called a:

A) Sill
B) Laccolith
C) Dike (or dyke)
D) Batholith