

Advanced Geological Principles

Geology · Answer Key · 10 Questions

1. Which mineral group, characterized by the $(\text{SiO}_4)^{4-}$ tetrahedral structure, constitutes approximately 90% of the Earth's crust?

- A) Feldspars**
- B) Micas
- C) Pyroxenes
- D) Amphiboles

2. In the context of paleomagnetism, what does a 'polar wander path' represent?

- A) The physical rotation of the Earth's inner core
- B) The apparent movement of the magnetic pole relative to a continent**
- C) The reversal frequency of the Earth's magnetic field over time
- D) The migration of tectonic plates due to mantle convection

3. Which metamorphic facies is typically associated with high-pressure, low-temperature conditions found in subduction zones?

- A) Granulite facies
- B) Greenschist facies
- C) Blueschist facies**
- D) Amphibolite facies

4. The Mohorovicic discontinuity represents the boundary between which two distinct layers of the Earth?

- A) Inner core and outer core
- B) Lithosphere and asthenosphere
- C) Crust and mantle**
- D) Mantle and outer core

5. Which igneous rock texture is characterized by large crystals, known as phenocrysts, embedded in a fine-grained groundmass?

- A) Phaneritic
- B) Aphanitic
- C) Porphyritic**
- D) Pyroclastic

6. What is the primary driver of the 'isostatic rebound' observed in regions formerly covered by continental ice sheets?

A) Thermal expansion of the mantle

B) Lithospheric loading and unloading

C) Magmatic underplating

D) Eustatic sea-level fluctuations

7. In sequence stratigraphy, what does a 'parasequence' represent?

A) A conformable succession of genetically related beds bounded by flooding surfaces

B) An unconformity caused by global sea-level fall

C) A sequence of volcanic deposits interlayered with sedimentary rock

D) The total thickness of a sedimentary basin fill

8. Which chemical weathering process is responsible for the conversion of feldspar into kaolinite clay?

A) Oxidation

B) Hydrolysis

C) Dissolution

D) Carbonation

9. What is the significance of the 'Conrad discontinuity' in crustal geology?

A) It separates the upper crust from the lower crust

B) It marks the transition from oceanic to continental crust

C) It defines the base of the lithosphere

D) It is the boundary between the inner and outer mantle

10. Which type of seismic wave is unable to propagate through the liquid outer core of the Earth?

A) P-waves

B) Rayleigh waves

C) S-waves

D) Love waves