

Planetary Geology and Astrogeology

Geology · Answer Key · 12 Questions

1. Which mineral is uniquely identified as the primary constituent of the 'blueberries' found by the Opportunity rover on Mars, indicating past aqueous activity?

- A) Hematite**
- B) Magnetite
- C) Ilmenite
- D) Chromite

2. What is the primary geological mechanism responsible for the ongoing resurfacing of Jupiter's moon Io?

- A) Cryovolcanism
- B) Tidal heating**
- C) Solar wind erosion
- D) Subduction zones

3. The 'Tharsis Bulge' on Mars is a massive volcanic plateau primarily formed by which type of geological structure?

- A) Shield volcanoes**
- B) Stratovolcanoes
- C) Cinder cones
- D) Caldera complexes

4. What is the chemical composition of the 'dunes' discovered by the New Horizons spacecraft in the Sputnik Planitia region of Pluto?

- A) Water ice
- B) Solid nitrogen**
- C) Solid carbon dioxide
- D) Silicate sand

5. Which lunar geological feature is caused by the cooling and contraction of the Moon's interior as it loses heat?

- A) Lobate scarps**
- B) Graben
- C) Rilles
- D) Mare ridges

6. The 'Great Red Spot' of Jupiter is a cyclonic storm, but which geological feature on Venus is considered a unique 'pancake' volcanic formation?

A) Coronae

B) Farra

C) Tesserae

D) Rift valleys

7. What is the primary constituent of the crust of Mercury, which is notably thinner than the Earth's crust relative to the planet's size?

A) Basaltic rock

B) Anorthositic rock

C) Granitic rock

D) Peridotite

8. Enceladus, a moon of Saturn, exhibits cryovolcanism primarily at which specific geological location?

A) Tiger stripes

B) The Great Dark Spot

C) Herschel crater

D) The equatorial bulge

9. What term describes the large, circular, elevated geological structures on Venus formed by upwelling mantle plumes?

A) Coronae

B) Calderas

C) Shields

D) Massifs

10. Which impact basin on Mars is the largest known impact structure in the solar system, measuring approximately 8,500 km in diameter?

A) Hellas Planitia

B) Utopia Planitia

C) Borealis Basin

D) Argyre Planitia

11. The 'Valles Marineris' on Mars is classified geologically as which type of feature?

A) Tectonic rift system

B) Erosional canyon

C) Impact scar

D) Volcanic conduit

12. What mineral phase, formed under extreme high-pressure conditions during meteorite impacts, is found in the Earth's crust as evidence of past bombardment?

A) Stishovite

B) Olivine

C) Pyroxene

D) Feldspar