

Planetary Geology and Astrogeology

Geology · Answer Key · 18 Questions

1. Which planet in our solar system has the largest volcano, Olympus Mons, which stands nearly three times the height of Mount Everest?

- A) Venus
- B) Mars**
- C) Jupiter
- D) Saturn

2. What is the primary constituent of the crust of the Moon, forming the light-colored highland regions?

- A) Basalt
- B) Anorthosite**
- C) Obsidian
- D) Granite

3. The surface of Venus is primarily composed of which type of volcanic rock?

- A) Basalt**
- B) Sandstone
- C) Limestone
- D) Shale

4. Which moon of Jupiter is the most volcanically active body in our solar system?

- A) Europa
- B) Ganymede
- C) Io**
- D) Callisto

5. What substance is believed to exist in a liquid state beneath the icy crust of Jupiter's moon, Europa?

- A) Liquid Methane
- B) Liquid Water**
- C) Liquid Iron
- D) Liquid Nitrogen

6. The vast, dark plains on the Moon, known as maria, are primarily composed of what material?

- A) Volcanic basalt**
- B) Sedimentary clay
- C) Metamorphic marble
- D) Granitic rock

7. Which planet has a surface characterized by 'tesserae', which are complex, deformed regions of elevated terrain?

- A) Mars
- B) Mercury
- C) Venus**
- D) Neptune

8. Impact craters on the Moon are often surrounded by debris thrown out during the impact, known as what?

- A) Ejecta**
- B) Magma
- C) Lava
- D) Sediment

9. What is the main component of the ice caps found at the poles of Mars?

- A) Frozen Methane
- B) Solid Carbon Dioxide and Water Ice**
- C) Frozen Ammonia
- D) Solid Nitrogen

10. Which spacecraft mission provided the first high-resolution geological maps of the surface of Mercury?

- A) Voyager 2
- B) Messenger**
- C) Cassini
- D) Galileo

11. The 'Great Red Spot' on Jupiter is a persistent high-pressure storm, but which geological feature is often studied in relation to its planetary interior dynamics?

- A) Metallic hydrogen layer
- B) Silicate core**
- C) Crustal plates
- D) Surface rift valleys

12. What is the term for the process that has created the long, winding 'rilles' found on the lunar surface?

- A) Tectonic shifting
- B) Lava flows**
- C) Wind erosion
- D) Glacial movement

13. Which asteroid, located in the asteroid belt, is so large that it is considered a protoplanet and has a differentiated interior?

- A) Vesta**
- B) Eros
- C) Itokawa
- D) Toutatis

14. Saturn's moon Titan is unique in the solar system for having surface features carved by what?

- A) Liquid methane rain**
- B) Volcanic water lava
- C) Solid ice glaciers
- D) Molten iron flows

15. Which geological process is responsible for the formation of the smooth, un-cratered plains observed on some moons?

- A) Cryovolcanism**
- B) Subduction
- C) Chemical weathering
- D) Aeolian deposition

16. The surface of Mercury features long, cliff-like structures known as what?

- A) Rift valleys
- B) Lobate scarps**
- C) Fold mountains
- D) Canyons

17. What defines the composition of the core of the gas giant Jupiter?

- A) Liquid helium
- B) Rocky material and metallic hydrogen**
- C) Dense clouds of ammonia
- D) Solid diamond

18. The study of meteorites found on Earth provides evidence for which planetary geological process?

- A) Differentiation of planetary interiors**
- B) Rapid tectonic plate growth
- C) Formation of sedimentary layers by wind
- D) Erosion by ancient liquid oceans