

Cosmic Electromagnetism

Electromagnetism · Answer Key · 10 Questions

1. Which planet in our solar system possesses the strongest planetary magnetic field?

- A) Earth
- B) Jupiter**
- C) Saturn
- D) Neptune

2. What is the primary cause of the aurora borealis and aurora australis on Earth?

- A) Solar wind interacting with the magnetosphere**
- B) Friction from atmospheric gases
- C) Refraction of starlight
- D) Heat from the Earth's core

3. What term describes the region of space around a planet where its magnetic field dominates the motion of charged particles?

- A) Exosphere
- B) Ionosphere
- C) Magnetosphere**
- D) Heliosphere

4. What are the intense streams of charged particles ejected from the Sun's upper atmosphere called?

- A) Solar flares
- B) Coronal mass ejections
- C) Solar wind**
- D) Sunspots

5. Which spacecraft was the first to detect that Mercury has a magnetic field?

- A) Mariner 10**
- B) Voyager 1
- C) Cassini
- D) Pioneer 11

6. What electromagnetic phenomenon is responsible for the intense radio emissions detected from Jupiter?

- A) Cyclotron radiation from trapped electrons**
- B) Thermal blackbody radiation
- C) Gravitational lensing
- D) Planetary rotation friction

7. What is the specific name for the boundary layer between the solar wind and the interstellar medium?

- A) Oort cloud
- B) Heliopause**
- C) Kuiper belt
- D) Event horizon

8. Which element is primarily responsible for generating Earth's global magnetic field through convection in the outer core?

- A) Liquid iron**
- B) Solid lead
- C) Gaseous hydrogen
- D) Solid carbon

9. Pulsars are highly magnetized, rotating neutron stars that emit beams of which type of electromagnetic radiation?

- A) Visible light only
- B) X-rays and radio waves**
- C) Microwaves only
- D) Infrared radiation only

10. What is the effect called when magnetic fields on the Sun snap and reconnect, releasing huge amounts of energy?

- A) Magnetic reconnection**
- B) Nuclear fusion
- C) Solar eclipse
- D) Gravity wave