

Astrophysics: Celestial Bodies and Cosmic Phenomena

Astrophysics · Answer Key · 10 Questions

1. Which planet in our solar system has the most prominent and extensive ring system, primarily composed of ice particles and dust?

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

2. What is the primary force responsible for holding stars together and enabling nuclear fusion to occur at their cores?

- A) Electromagnetic force
- B) Strong nuclear force
- C) Gravitational force**
- D) Weak nuclear force

3. The Andromeda Galaxy, our closest large galactic neighbor, is currently on a collision course with the Milky Way. Approximately how long until this galactic merger is expected to begin?

- A) 500 million years
- B) 1 billion years
- C) 4.5 billion years**
- D) 10 billion years

4. What is the term for a celestial object that has a mass too small to initiate sustained nuclear fusion in its core, but is more massive than a giant planet?

- A) White dwarf
- B) Neutron star
- C) Brown dwarf**
- D) Black hole

5. Which of the following is the largest known volcano in our solar system, located on Mars?

- A) Mount Everest
- B) Mauna Kea
- C) Olympus Mons**
- D) Vesuvius

6. The Cosmic Microwave Background (CMB) radiation is a remnant of which event in the universe's history?

A) The formation of the first stars

B) The Big Bang

C) The creation of black holes

D) The collapse of nebulae

7. What is the name for a star that has exhausted its nuclear fuel and is in the process of collapsing under its own gravity, potentially leading to a supernova?

A) Red giant

B) Main sequence star

C) Protostar

D) Supergiant

8. Which planet is known for its extreme axial tilt, causing it to orbit the Sun on its side?

A) Mars

B) Jupiter

C) Saturn

D) Uranus

9. What is the process by which a large star collapses and explodes, briefly outshining an entire galaxy and scattering heavy elements into space?

A) Stellar nucleosynthesis

B) Planetary nebula formation

C) Supernova

D) Accretion disk formation

10. The habitable zone, also known as the 'Goldilocks zone,' refers to the region around a star where conditions might be right for liquid water to exist on a planet's surface. What is the primary factor determining the location and size of a star's habitable zone?

A) The star's magnetic field strength

B) The star's mass and luminosity

C) The planet's atmospheric composition

D) The planet's orbital speed