

# Fundamentals of Astrophysics

Astrophysics · Answer Key · 10 Questions

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## 1. What is the primary process that powers a main-sequence star?

- A) Nuclear fission of uranium
- B) Gravitational contraction
- C) Nuclear fusion of hydrogen into helium**
- D) Chemical combustion of carbon

## 2. Which classification describes the majority of stars found in the Milky Way?

- A) Red giants
- B) White dwarfs
- C) Main-sequence stars**
- D) Neutron stars

## 3. What is the Schwarzschild radius associated with?

- A) The orbit of an exoplanet
- B) The event horizon of a non-rotating black hole**
- C) The density limit of a white dwarf
- D) The distance to the Andromeda Galaxy

## 4. Which element is the most abundant by mass in the observable universe?

- A) Helium
- B) Oxygen
- C) Carbon
- D) Hydrogen**

## 5. What defines the Chandrasekhar limit?

- A) The maximum mass of a stable white dwarf**
- B) The distance at which a planet becomes tidally locked
- C) The temperature required for helium ignition
- D) The speed at which a galaxy rotates

## 6. Which of the following is considered the primary evidence for the Big Bang theory?

- A) The discovery of dark matter
- B) Cosmic microwave background radiation**
- C) The existence of asteroid belts
- D) The rotation curve of galaxies

**7. What type of celestial object is a pulsar?**

**A) A rapidly rotating neutron star**

B) An active galactic nucleus

C) A collapsing protostar

D) A variable red giant

**8. According to the Hertzsprung-Russell diagram, a star's luminosity is primarily a function of its temperature and what other property?**

A) Chemical composition

B) Rotational velocity

**C) Radius**

D) Magnetic field strength

**9. What phenomenon causes the observed redshift in light from distant galaxies?**

A) Gravitational lensing

**B) The expansion of space**

C) Interstellar dust obscuration

D) Doppler shift due to galactic rotation

**10. Which force is responsible for the collapse of an interstellar molecular cloud to form a star?**

A) Electromagnetism

B) Strong nuclear force

**C) Gravity**

D) Weak nuclear force