

Geophysical and Astrophysical Phenomena

Advanced Physics · Answer Key · 8 Questions

1. Which layer of the Earth's atmosphere contains the highest concentration of ozone, absorbing the majority of the Sun's ultraviolet radiation?

- A) Troposphere
- B) Stratosphere**
- C) Mesosphere
- D) Thermosphere

2. The Coriolis effect, a consequence of Earth's rotation, significantly influences the direction of wind patterns. In which direction are large-scale cyclones deflected in the Southern Hemisphere?

- A) Clockwise**
- B) Counter-clockwise
- C) Westward
- D) Eastward

3. At the geographic South Pole, the Sun remains above the horizon for approximately six months. This phenomenon is primarily governed by which physical mechanism?

- A) Atmospheric refraction
- B) Axial tilt**
- C) Precession of the equinoxes
- D) Geomagnetic field intensity

4. Which mountain range provides the most significant evidence of continental crust thickening due to the ongoing plate tectonic collision between the Indian and Eurasian plates?

- A) Andes
- B) Alps
- C) Himalayas**
- D) Rockies

5. The Earth's magnetic field is generated by the geodynamo effect occurring in which specific layer of the planet?

- A) Inner core
- B) Outer core**
- C) Lower mantle
- D) Crust

6. The Mauna Kea Observatory in Hawaii is considered a premier site for infrared astronomy primarily because of which physical property of its altitude?

A) Reduced atmospheric water vapor

B) Higher gravitational potential

C) Increased ionospheric density

D) Proximity to the magnetic equator

7. Which deep-sea trench, located in the western Pacific Ocean, represents the point of maximum depth in the Earth's crust due to subduction physics?

A) Java Trench

B) Puerto Rico Trench

C) Mariana Trench

D) Tonga Trench

8. The 'Midnight Sun' phenomenon observed in regions north of the Arctic Circle is a direct result of which orbital parameter?

A) Eccentricity of Earth's orbit

B) Obliquity of the ecliptic

C) Nutation of the rotational axis

D) The solar wind pressure