

Geophysical and Astrophysical Phenomena

Advanced Physics · Practice Test · 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