Geography · GS - I

Discuss the geophysical characteristics of Circum-Pacific Zone.

EXAM YEAR	PAPER	SUBJECT
2020	GS - I	Geography

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Pacific Ring of Fire; tectonic plate boundaries; earthquakes; volcanoes; ocean trenches; mountain chains; island arcs; natural hazards

Model Answer

Introduction

The Circum-Pacific Zone, commonly called the Pacific Ring of Fire, is a tectonically active belt surrounding much of the Pacific Ocean. It is characterised by intense interactions among lithospheric plates.

Major geophysical characteristics

- **Convergent plate boundaries:** The Pacific Plate and neighbouring plates interact through subduction, producing intense tectonic activity.
- **Frequent earthquakes:** Sudden movement along faults and subduction zones causes frequent earthquakes, including powerful megathrust earthquakes.
- **Volcanic activity:** Numerous active volcanoes occur along the western coasts of the Americas and the island arcs of East and Southeast Asia.
- **Deep ocean trenches:** Subduction creates features such as the Mariana Trench, among the deepest parts of the world's oceans.
- **Mountain building:** Plate convergence contributes to mountain formation and uplift along regions such as the Andes.

- **Island arcs:** Volcanic island chains, including Japan and the Aleutian Islands, reflect subduction-related processes.
- **Tsunami vulnerability:** Undersea earthquakes and volcanic disturbances can displace large volumes of water, generating destructive tsunamis.

Conclusion

The Circum-Pacific Zone illustrates the dynamic nature of plate tectonics. Its distinctive landforms and geological processes create rich mineral and geothermal resources, but also expose surrounding populations to major natural hazards.

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