



# Sambhav

## Day 64

**Question 1.** What is Plate tectonic theory. How it was an improvement over the continental drift theory. Discuss. (250 words)

**Question 2.** Despite huge mineral resources in eastern India, region remains underdeveloped. Illustrate reasons behind it. (150 words)

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## Approach / Explanation / Answer

### Answer 1

#### Approach

- Briefly introduce the concept of distribution of first order feature on the earth.
- Illustrate the Plate tectonic theory and how it was an improvement over the continental drift theory.
- Conclude Suitably.

#### Introduction

- Continents and Ocean basins being fundamental relief features of the globe are considered as 'relief features of the first order'.
- The distribution of the continents and the oceans is explained by the number of hypotheses and theories ranging from tetrahedral hypothesis, Continent Drift theories, and Plate Tectonic theory, etc.

#### Body

##### Plate Tectonic Theory (PTT):

- H. Hess postulated the concept of the plate tectonic theory in 1960.
- Concept of the continental drift and the sea floor spreading were the main concepts behind the PTT.
- Theory postulated the Paving Stone Hypothesis where ocean crusts are newly formed at mid-oceanic ridge and destroyed at the trenches.
- It divides the plates margins (All tectonic activities occur along the plate margins) in to:

- **Constructive Plate Margins:** E.g., Mid Oceanic Ridge of Atlantic.
- **Destructive Plate Margins:** E.g., Ring of Fire around the Pacific.
- **Conservative Plate Margins:** E.g., Plates of Indian and Antarctica.

- The moving molten magma is considered as the driving force behind the motion of the plate in the plate tectonic theory.

### **Continent Drift Theory (CDT) of Wegener (1912):**

- Main objective behind his displacement hypothesis was to explain the global climate changes that took place in geological time of earth.
- Continental or sialic masses were floating on sima without any resistance offered by sima.
- He had also advocated the concept of a single landmass (Pangaea).
- Subsequent division in Pangaea eventually resulted in the present distribution of the landmass.

### **Improvement by the Plate tectonic theory over CDT:**

Mapping of the ocean floor and palaeomagnetic studies of rocks from oceanic rocks revealed several scientific facts which were not available at time of CDT. Like:

- Plate tectonic theory explains the mechanism behind the movement of continents by proposing that the Earth's lithosphere is made up of large, rigid plates that move around on the Earth's surface. This provides a more complete explanation for how the continents can move and change shape over time.
- Plate tectonics explains the formation of new oceanic crust at mid-oceanic ridges and the destruction of oceanic crust at subduction zones. This helps to explain the distribution of oceanic crust and the creation of new ocean basins over time.
- Plate tectonics explains the distribution of earthquakes, volcanoes, and mountain ranges around the world. For example, earthquakes and volcanoes are concentrated along plate boundaries, and mountain ranges form where plates collide.
- Plate tectonics explains the distribution of fossils and rock formations on the continents. This helps to explain how different regions of the world were once connected, and how the continents have changed over time.
- Plate tectonics provides a unifying explanation for a wide range of geological observations. This allows scientists to make predictions about future tectonic activity and to better understand the Earth's history and evolution.
- Plate tectonics also explains the existence of hot spot volcanoes, which are volcanic areas which are not located on plate boundaries but are due to the presence of a hot spot beneath the plate.
- Plate tectonics also explains the existence of magnetic stripes on the ocean floor, which are due to the process of seafloor spreading.

### **Conclusion**

The continental motion of the CDT was changed into plate's motion in the plate tectonic theory and with other development of the plate tectonic like seafloor spreading and paleomagnetic bring us on the conclusion that the plate tectonic was a further development of CDT, which had tried to explain the motion of the continents.

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## **Answer 2**

### **Approach**

- Introduce by mentioning about the mineral wealth of Eastern India.
- Mention the reasons for poor socio-economic growth of the region and suggest measures to

- improve the condition.
- Conclude suitably.

## Introduction

- As per the ministry of Mines data, the eastern states of India - Jharkhand (7.72%), Chhattisgarh (6.65%) and Odisha (10.62%) account for more than 24.9% of the value of mineral production in the country. Despite being mineral rich region, it remains to be one of the most underdeveloped regions of the country. They continue to fare badly in indicators like health, education, employment and social inclusion.

## Body

### Reasons for poor growth and social indices:

- **Neglect in policy making:** The region has a history of exploitation of its mineral wealth without giving due regard to harmful impacts on the environment and local people. The locals being poor and vulnerable have no say in high level decision making. Even Gram Sabhas do not work as per their mandate.
- **Opposition from local people:** Rapid growth and industrialization is resisted by local people due to mistrust on governance policies which resulted into **growth of Naxalism**.
- **Difficult terrain and low outreach:** A number of villages are remotely located which creates hindrances in implementation of government programmes like immunization, literacy promotion, etc.
- **Negative impacts of mining:** Mining has direct impacts on health and well-being of locals. Cancer cases in the nearby villages of Jaduguda mines of Jharkhand due to radioactive waste generated from uranium mining are widely documented.
- **Capitalizing Benefits:** The benefits are outsourced to other states and cities.e.g., steel manufactured in Jharkhand is being used in Delhi and Mumbai etc.

### Remedial measures to improve the situation:

- **Utilizing District Mineral Foundation funds:** MMDRA Act 2015 mandates that 60% of the DMF funds must be utilized for high priority areas such as drinking water supply, health care, sanitation, education, skill development, women and child care, welfare of aged and disabled people and environment conservation.
  - There is need to expedite work of **Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)** to ensure sustainable livelihood for the affected people.
- **Institutional approaches: National Mineral Policy 2019** suggests establishing an **inter-ministerial body** to create a mechanism for ensuring sustainable mining with adequate concerns for the environment and socio-economic issues in the mining areas, and to advise the Government on rates of royalty, dead rent etc.
- **Investing in infrastructure:** Improving connectivity, increasing irrigated area which is currently only 16.6% in Chhattisgarh and 7% in Jharkhand is the need of the hour.
- **Promoting local specialization and resources:** Providing **GI tags** to local producers which help in export earning, promotion of tourism, cultural heritage and regional identity, simultaneously preserving traditional skills. For example, Odisha's Kotpad Handloom fabric, Bastar Iron Craft of Chhattisgarh, etc.
  - Similarly, with India going plastic free, utilizing the minor forest produce like Tendu leaves, jute and handloom products has immense potential to boost the local economy.
- **Boosting tourism potential:** The **Tribal Circuit** of **Swadesh Darshan Scheme** aims to develop and promote tribal rituals, festivals, customs and culture. This is also necessary to promote national integration by developing a sense of respect for the tribal way of life.

## Conclusion

- Development of the Eastern States is critical for achieving Sustainable Development Goals 1(No poverty), 2(Zero Hunger), 3(Good Health and Well Being), 4(Quality education) and 10(Reduced

Inequalities).

- All developmental policies for the socio-economic growth of the region should adhere to the motto of 'Sabka Sath Sabka Vikas'. Inclusive and sustainable growth is the way forward.

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