CHAPTER - 1
ON THE ROOF OF THE WORLD

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1. **"The geographical diversity of India plays a decisive role in shaping the country's identity. List the five major physiographic divisions of India**

- The Northern Mountain Region
- The North Indian Plain
- The Peninsular Plateau
- The Indian Desert
- The Coastal Plains and Islands

2. **Explain the physiographic divisions of the Northern Mountain Region and describe their characteristics.**

Answer

The Northern mountain ranges form the north and the north eastern boundary of the Indian subcontinent. Based on topographical characteristics, the region is classified into three:

a) **Trans Himalayas**
b) **The Himalayas**
c) **The Eastern Hills (Purvachal)**

Trans Himalayas

- This is the northern most division of the Northern mountains.
- It is also known as the Tibetan Himalayas.
- The region has an average elevation of 3000 metres.
- The Karakoram range in this division connects the Himalayas with the Pamir Knot.
- Major mountain ranges in this division include Karakoram, Ladakh, and Zaskar.
- It has an approximate width of 40 km and a length of 965 km.

The Himalayas

These mountains are formed by the folding of rock layers due to the compression of sedimentary rock strata. They consist of three parallel ranges:

The Himadri:

- Known as the Greater Himalayas or the Inner Himalayas.
- It is the mountain range that lies at an average elevation of about 6100 metres above the mean sea level.
- The width of this range is nearly 25 km.
- These are snow-clad mountains containing most of the world's highest peaks like Mt. Everest and Kanchenjunga .

The Himachal:

- Known as the Lesser Himalayas.
- It has an average elevation ranging from 3500 to 4500 metres above the mean sea level.
- The width of this range is between 60 to 80 km.

The Shiwaliks:

- Known as the Outer Himalayas.
- It is the southern most range of the Himalayan ranges.
- It forms the borders of the Ganga Plains.
- The height ranges from an average of 600 to 1500 metres.
- The width ranges from an average of 10 to 150 km.

The Eastern Hills (Purvachal)

- These are hills of lesser elevation compared to the Western Himalayas.
- They are seen in the north-south direction from Arunachal Pradesh up to Mizoram.
- The average elevation ranges from 500 to 3000 metres above mean sea level.
- Major hills include Patkaibum, the Naga Hills, the Mizo Hills, and the Manipur Hills.
- Mawsynram and Cherrapunji, which receive the highest rainfall in the world, are located in this region.
- The highest peak in the Eastern Himalayan region is Namcha Barwa at 7756 metres.

3. "The surface of the earth is subject to constant change due to the movement of lithospheric plates.

a) Name the three types of plate boundaries.

b) Briefly explain how the Himalayan Mountains were formed.

Answer:

a) Types of Plate Boundaries:

- **Convergent Boundary:** Where plates move towards each other.
- **Divergent Boundary:** Where plates move away from each other.
- **Transform Boundary:** Where plates slide past each other horizontally.

b) Formation of the Himalayas:

- The Himalayas were formed along a **convergent boundary**.
- Millions of years ago, the **Indian plate** began moving northwards towards the **Eurasian plate**.
- The **Tethys sea** was located between these two large landmasses.
- As the plates collided, the sediment layers on the floor of the Tethys sea were compressed and folded.
- This intense folding and uplifting of rock layers resulted in the formation of the Himalayan **fold mountains**.

4. Explain the regional divisions of the Himalayas based on the river valleys ,

Answer:
The Himalayas are divided into three main regional sections based on the rivers that define their boundaries: The Western Himalayas , Central Himalayas, Eastern Himalayas

The Western Himalayas

- The Western Himalayas extend across a length of approximately 880 km from the Indus River to the Kali River.
- This region is subdivided into the Kashmir Himalayas, Himachal Himalayas, and Kumaon Himalayas

The Kashmir Himalaya.

- The Kashmir Himalaya extends over nearly 3.5 lakh sq. km within the Jammu and Kashmir and Ladakh regions.
- This mountain region is approximately 700 km long and 500 km wide.
- Major Mountain Ranges in this area include the Karakoram, Zaskar, Ladakh, and Pir Panjal.
- It is home to Mount Godwin-Austin (K2), which is the highest mountain peak in India.

- The landscape is famous for its wide and scenic valleys, specifically the Kashmir, Kulu, and Kangra valleys.
- Popular hill stations and tourist destinations in this sector include Shimla, Manali, Gulmarg, and Srinagar.
- High-altitude alpine meadows are locally referred to as 'Marg' in Kashmir (e.g., Sonamarg) and 'Bugyals' in the Kumaon region.
- Strategically important mountain passes such as Zoji La and Rohtang Pass are located in this division.
- The region features famous freshwater and high-altitude lakes, including Dal Lake in Kashmir.
- The Siachen Glacier, one of the world's longest mountain glaciers, is situated in the Karakoram range of this sector.

The Himachal Himalaya

- The state of Himachal Pradesh contains the largest portion of the Himachal Himalaya.
- The Chenab, Ravi, and Beas are identified as the most significant rivers flowing through this mountainous terrain.
- The primary mountain ranges located within this specific region are the Dhauladhar and the Pir Panjal.
- Freshwater lakes, such as Surajtal and Chandratal, are situated within these mountain ranges.
- The Baralacha La Pass serves as a critical transport link between Himachal Pradesh and Ladakh.
- The Rohtang Pass provides a connection between the Kulu Valley and the valleys of Lahul and Spiti.
- The region is home to several famous valleys including Kulu, Kangra, and Lahul.
- Tourist centers like Shimla and Manali attract many visitors due to their mild summers and winter snowfall.

The Uttarakhand Himalaya

- The Uttarakhand Himalaya is defined as the section of the mountains stretching from the River Satluj to the River Kali.
- The western portion of this region is referred to as the Gadwal Himalaya, while the eastern portion is known as the Kumaon Himalaya.
- Prominent high-altitude peaks in this area include Nanda Devi, Kamet, Badrinath, and Kedarnath.
- The major rivers Ganga and Yamuna have their origins in the Gangotri and Yamunotri glaciers located here.
- Nainital and Bhimtal are noted as significant freshwater lakes found within this region.
- Manikaran in Himachal Pradesh currently utilizes geothermal energy from hot springs to operate a power plant.

- Duns are characterized as flat valleys that are situated between the Shiwalik hill ranges and the Lesser Himalayas. Eg: Dehradun, located in Uttarakhand.
- Bugyals are alpine summer meadows found on high-altitude mountain slopes that are covered in snow during the winter months. Eg: Dayara Bugyal and Gorson Bugyal.

Central Himalayas

- The Central Himalayas stretch for about 800 km between the Kali River and the Teesta River.
- This section is most commonly known as the Nepal Himalayas because the majority of it lies within Nepal.
- It contains the world's highest peak, Mount Everest, as well as Kanchenjunga, the third-highest peak.
- Major perennial rivers like the Ganga, Yamuna, and Gandak originate from the massive glaciers in this region.
- Important pilgrimage sites and tourist centers include Kathmandu, Pokhara, Badrinath, and Kedarnath.
- High-altitude lakes such as Phewa Lake in Nepal and the nearby Mansarovar are prominent features of this geography.
- The region features high mountain passes such as Nathu La (on the Sikkim border) and Lipulekh Pass.
- The Gangotri and Yamunotri glaciers in this sector serve as the primary sources for India's holiest rivers.

Eastern Himalayas

- The Eastern Himalayas extend from the Teesta River to the Brahmaputra River, covering about 720 km.
- This region is widely referred to as the Assam Himalayas.
- It receives significantly higher annual rainfall compared to the Western Himalayas, leading to high humidity.
- Famous tourist spots and hill stations in this sector include Darjeeling, Gangtok, and Tawang.
- The Brahmaputra River enters India by carving through deep, narrow gorges in this part of the mountains.
- Scenic high-altitude lakes like Tsomgo (Changu) Lake in Sikkim are popular attractions in this division.
- Strategic mountain passes such as Bomdila and Jelep La connect this region to neighboring territories.
- The region is covered with dense evergreen forests and is recognized as a global biodiversity hotspot.
- The southern extension beyond the Brahmaputra consists of the Purvachal hills, including the Patkai Bum, Naga, and Mizo hills.

- The cool climate and specific soil conditions of this region make it ideal for extensive tea plantations.

5. "The Himalayas act as a great climatic divide for the Indian subcontinent." Substantiate this statement.

- The Himalayas form a continuous mountain wall that prevents the freezing cold winds of Central Asia from entering the Indian subcontinent.
- They intercept the moisture-laden South West monsoon winds, which leads to heavy rainfall along the southern slopes and North Eastern India.
- The high altitude of the mountains creates polar-like extreme winter conditions in regions like Ladakh while keeping the plains relatively warmer.
- The varying topography of the mountain range causes the climate to change significantly from the foothills to the high peaks.

6. Compare the features of the Himalayan rivers with their geographical impact.

- The Indus, Ganga, and Brahmaputra are perennial rivers as they are fed by both seasonal rainfall and the melting of glaciers.
- In their mountainous course, these rivers have turbulent flows that carve out deep V-shaped valleys and majestic waterfalls.
- As these rivers reach the plains, they create fertile landforms but are also prone to frequent flooding and channel deviations.

7. Explain how natural vegetation and wildlife in the Himalayas change according to altitude.

- Differences in elevation, topography, and climate lead to distinct regional variations in vegetation.
- Deciduous and semi-evergreen forests are found in the valleys, while coniferous trees like pine and deodar grow between 1000 to 2000 meters.
- At the highest altitudes where it is extremely cold, Tundra-type vegetation like mosses and shrubs can be found.
- The region provides a unique habitat for specialized wildlife such as the yak, musk deer, and the rare snow leopard.

8. Analyze the various human activities and occupations prevalent in the Himalayan region.

- Due to the steep terrain and low temperatures, people practice terrace farming on mountain slopes for crops like paddy and potatoes.
- In the Kashmir Valley, humus-rich glacial deposits called 'Karewas' are specifically used for the cultivation of high-value saffron.
- Animal rearing is a major occupation, with shepherd tribes like the Gujjars moving their livestock between meadows and valleys based on the seasons.
- Tourism has become a vital economic activity, ranging from traditional pilgrimages to modern adventure sports like skiing and paragliding.

9. Explain the importance of Tourism in the Himalayan region.

- The entire Himalayan region has become a zone with high economic potential for tourism due to favorable geographical conditions.
- Tourism was initially initiated by pilgrimage travels to centers such as Kailas, Manasarovar, Amarnath, and Hemkund Sahib.
- During the 19th century, the British identified favorable climates and developed resort towns like Shimla, Darjeeling, Shillong, Almora, Mussoorie, and Nainital.
- Modern adventure tourism is a significant sector today, promoting activities like mountaineering, paragliding, and skiing.