

CHAPTER - 2

IN THE EXPANSIVE PLAIN

1. Explain the role of geomorphic agents and processes in the formation of diverse landforms.

Answer:

- Diverse landforms are formed on the surface of the Earth through the continuous processes driven by external forces such as running water, wind, glaciers, and waves.
- These external forces that operate on the Earth's surface are called geomorphic agents.
- The processes that lead to the formation of landforms are called geomorphic processes.
- These materials are then deposited conveniently in low-lying regions; this process is called deposition.

2. Describe the formation of the fertile Indo-Gangetic-Brahmaputra plain.

Answer:

- The fertile Indo-Gangetic-Brahmaputra plain was also formed in the same way by the deposition of sediments carried by rivers.
- The sediments are deposited in a vast depression formed at the south of the Himalayas which was formed as a result of the formation of the Himalayas.
- The sediments, transported by rivers originating from both the Himalayas and Peninsular India, were deposited in this expansive depression.
- The continuous depositional processes over millions of years have contributed to the evolution of this fertile plain.

3. What are the physical dimensions and extent of the North Indian Plain?

Answer:

- The Indo-Gangetic-Brahmaputra Plain extends approximately over 3200 km from the mouth of River Indus to the mouth of River Ganga.
- It spreads over around 2400 km in India.
- The plain widens from east to west, with the width varying between 150 km and 300 km.
- The plain covers an area of approximately 7 lakh sq. km.

4. Why is the North Indian Plain highly suitable for agriculture?

Answer:

- Features such as fertile soil make this region suitable for agriculture.

- The region has an adequate water supply from major rivers.
- The favorable climate supports the cultivation of various crops.
- Flat topography makes this region suitable for farming activities.

5. Explain the geographical features of the Rajasthan Plain.

Answer:

- The Rajasthan Plain includes the Thar Desert and marks the westernmost end of the North Indian Plain.
- The actual desert area is called Marusthali and the semi-arid region is known as Rajasthan Bagar.
- The Rajasthan Plain is situated to the west of the Aravalli Mountain range.
- A significant river in this plain is the Luni, which is non-perennial in nature.

6. Describe the characteristics of the Punjab-Haryana Plain.

Answer:

- This plain extends over the states of Punjab, Haryana, and Himachal Pradesh.
- It covers an area of approximately 1.75 lakh sq. km.
- The Punjab-Haryana Plain is etymologically known as the Land of Five Rivers.
- The plain is divided into five major doabs, which is a land lying between two rivers that join together later.

7. Analyze the extent and divisions of the Ganga Plain.

- The Ganga Plain stretches from Bangladesh in the east to the Yamuna River in the west.
- It covers an area of approximately 3.75 lakh sq. km.
- The average elevation of the Ganga Plain is around 200 metres above mean sea level.
- The plain has been further divided into three regions: Upper Ganga Plain, Middle Ganga Plain, and Lower Ganga Plain.

8. Explain the formation and location of the Brahmaputra Plain.

Answer

- The Brahmaputra Plain constitutes the easternmost part of the North Indian Plain.
- It spans approximately 720 km in length, with the width ranging from 60 to 70 km.
- The plain is formed through the depositional processes carried out by the Brahmaputra River and its tributaries.

- Major tributaries include the Teesta, Manas, Lohit, and Dibang.

9. Define 'Doab' and list the major doabs.

Answer:

- A doab is a land lying between two rivers that join together later.
- Bist-Jalandhar Doab is between the rivers Beas and Satluj.
- Bari Doab is between the rivers Beas and Ravi.
- Rechna Doab is between the rivers Ravi and Chenab.

10. What are alluvial fans and how are they formed?

- The Brahmaputra plain is rich in alluvial fans.
- When rivers enter a plain from mountainous regions, their velocity decreases abruptly.
- The sediments (alluvium) carried by the rivers get deposited in the form of fans.
- Such depositional landform features are referred to as alluvial fans.

11. Describe how meanders and ox-bow lakes are formed in a river's course.

Answer:

- A river flowing through comparatively gentle slopes deviates when alluvial deposits within the river course create obstructions.
- This deviation leads to the formation of sinuous curves along the river course, creating meanders.
- Over time, continuous erosion and deposition cause meanders to curve further.
- When the river takes a straighter course, curved sections get detached from the main river, forming isolated water bodies called ox-bow lakes.

12. Analyze the features of the Bhabar region of the North Indian Plain.

Answer:

- Bhabar is a narrow belt, approximately 8 to 10 km wide, running parallel to the Shiwalik mountain range at the break-up of the slope.
- It is situated to the south of the Shiwalik mountain range along its foothills.
- This zone is formed by the deposition of rocks and boulders brought by rivers flowing from the mountains.
- The rivers flowing through this region are not visible as they flow beneath the rocks and boulders.

13. Explain the characteristics and significance of Flood Plains.

Answer:

- During floods, the alluvium brought by rivers gets deposited along the banks of a river, and plains are formed.
- The plains thus formed are called flood plains.
- These areas are ideal for agriculture and many well-known river valley civilizations flourished along such flood plains.
- These plains consist of fertile soil deposited by the periodic overflow of the river.

14. Describe the Tarai region and its environmental importance.

- The Tarai is a marshy and swampy tract, approximately 10 to 20 km wide.
- It is running parallel to the Bhabar belt.
- The rivers that disappear in the Bhabar region re-emerge in this area.
- Tarai has a luxurious growth of natural vegetation and serves as a habitat for varied wildlife.

15. Compare Bhangar and Khadar based on their formation and location.

Answer:

- To the south of the Tarai, the belt consisting of older and newer alluvial deposits forms the Alluvial plain.
- The older alluvial deposits are called the Bhangar.
- The newer alluvial deposits are referred to as the Khadar.
- The major characteristic features of this region include depositional landforms such as riverine islands, sandbars, and deltas.

16. What are Riverine Islands and Sandbars? How are they formed?

Answer:

- When rivers flow through plains, their velocity and depth are comparatively low.
- Therefore, the sediments brought by rivers get deposited, forming islands in the river channels (Riverine Islands) and ridges along their sides (Levees).
- Linear landforms formed by sediments including sand, silt, and gravel along river beds are called sandbars.
- These features are results of the depositional processes in the mature or lower course of a river.

17. Explain the formation and naming of Deltas.

Answer:

- When the river nears the river mouth through the plains, the velocity of the river decreases.
- Most rivers branch out into distributaries at this stage.

- The volume of both water and sediments is high, and sediments are deposited between these distributaries, forming almost triangular-shaped landforms.
- These features are named after the Greek alphabet Δ (Delta) due to their resemblance in shape.

18. Identify the zones of the North Indian Plain from North to South.

Answer:

- The North Indian Plain can be divided into three zones from north to south based on geomorphic features.
- The first zone starting from the foothills of the Himalayas is the Bhabar.
- South of Bhabar lies the marshy Tarai belt.
- The southernmost part consists of the Alluvial plains, comprising Bhangar, Khadar, and Deltas.

19. Discuss the human and environmental importance of the North Indian Plain.

Answer:

- The fertile flood plains provide ideal conditions for agriculture and have supported ancient civilizations.
- The Tarai region is vital for biodiversity, serving as a habitat for varied wildlife and natural vegetation.
- Features like riverine islands and deltas are significant geographical formations supporting local ecosystems.
- The availability of flat land and water makes this region one of the most populated and economically active areas.

20. Why is excessive cold experienced in the North Indian Plain during winter?

Answer:

- The major portion of the North Indian Plain is located far away from the moderating influence of the oceans, resulting in a continental climate.
- Snowfall in the nearby Himalayan ranges contributes to strong cold waves.
- Cold winds from West Asia cause frost, fog, and cold waves in the western part of the North Indian Plain.
- The apparent movement of the sun from the northern hemisphere towards the southern hemisphere adds to the cold conditions.

21. Describe the characteristics of the "Loo".

- In the months of May and June, hot, dry, and oppressive wind blows from the desert region of Rajasthan to the Ganga Plain.
- This wind is called 'Loo'.
- It increases the temperature considerably in the North Indian Plain.

- The temperature rises up to 48 Degree Celsius in the western part of the North Indian Plain during this time.

22. "Explain the seasonal reversal of wind systems in India by comparing the Southwest Monsoon and the Northeast Monsoon. In your answer, specifically discuss how the movement of the sun influences pressure conditions and describe the resulting weather phenomena such as 'October Heat'."

Answer :

The Southwest Monsoon

- During summer, the landmass of India heats up significantly, creating a low-pressure area over the North Indian Plain.
- Moisture-laden winds are drawn from the high-pressure area over the Indian Ocean toward this low-pressure zone.
- Upon reaching the peninsula, the winds divide into the Arabian Sea branch and the Bay of Bengal branch.
- The Arabian Sea branch moves parallel to the Aravali Mountains, which is why Rajasthan receives very little rain.
- The Bay of Bengal branch enters through the Sundarbans, with one part moving toward the Brahmaputra Plain and the other traveling west along the Ganga Plain.

The Northeast Monsoon (Retreating)

- As the sun moves toward the southern hemisphere, the low-pressure area over the northern plains weakens.
- A high-pressure system develops over the North Indian Plain, causing winds to reverse and blow from the land toward the sea.
- These winds are generally dry, resulting in a dry climate across the northern regions during this season.
- The transition period is marked by "October heat," where high temperatures and high humidity make the weather feel oppressive.

23. Discuss the features of Tropical Deciduous Forests.

Answer:

- They are further divided into dry deciduous forests and moist deciduous forests.

- Trees shed their leaves for approximately 6 to 8 weeks in the dry season when moisture is not available.
- Moist deciduous forests are found in areas with moderate rainfall, ranging from 100 cm to 200 cm per annum.
- Main species include teak, sal, shisham, mahua, amla, and sandalwood.

24. Describe the Tropical Thorn Forests.

Answer:

- They are prevalent in the semi-arid areas of southwest Punjab, Haryana, Eastern Rajasthan, and Uttar Pradesh.
- Natural vegetation is sparse due to low rainfall and intensive cattle rearing.
- These forests consist of various grasses and shrubs.
- Important species include babool, ber, wild date palm, khair, neem, khejri, and palas.

25. What are the features of Swamp Forests?

Answer:

- They are found in the vast saline expanses of Rajasthan and freshwater lakes.
- They also occur in the freshwater marshes of the Ganga Plain and the flood plains of the Brahmaputra.
- The marshy deltaic region of the Ganga Plain in West Bengal is called Sundarbans.
- Mangroves are found luxuriously in this region and serve as a habitat for the Royal Bengal Tiger.

26. Explain the importance of Mangrove forests.

Answer:

- The roots of mangrove forests create a natural habitat for numerous aquatic species, including fishes.
- They are the abode of varied species of birds.
- Sundri, a type of mangrove, is a distinctive feature of the Sundarbans delta.
- They protect the coastal regions and sustain a diverse ecosystem.

27. Compare Alluvial soil and Arid soil.

Answer:

- Alluvial soil varies from sandy loam to clay and is well-suited for agriculture.

- It is found extensively in the plains of Rajasthan, Gujarat, and the Ganga Plain.
- Arid soil is found in the western parts of the North Indian Plain and is generally sandy and saline in structure.
- Arid soil lacks humus and moisture, requiring irrigation support for plants to grow.

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