

Chapter- 3

Drainage

STUDY NOTES

The drainage – the rivers system of an Area

- **Drainage** An area drained by the streams or tributaries of a single river is known as a drainage basin.
- A river along with its tributary is known as a river system.

Benefits of Rivers are:

- It is a natural resources which is very much essential for Human activities
- The banks of the rivers have always attracted settlers from ancient times.
- The rivers waters are used for irrigation, navigation, hydro-electric power generation etc.
- In India it is the live hood of the majority of the population.

Drainage Basin/ Water Divide

- The area drained by a single river system is called a drainage basin.
- When a mountain or an upland separates two drainage basins, it is known as water divide or water shed.
- Drainage System in India Relief features plays an important part in controlling the drainage system in India.

Drainage pattern

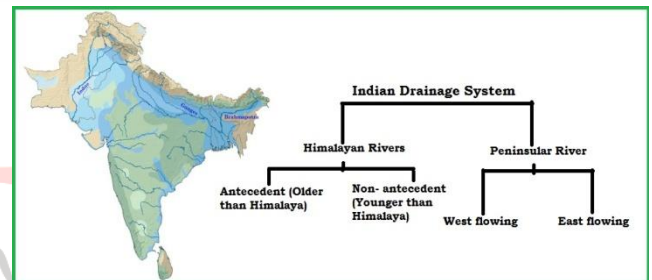
- Drainage pattern a pattern created by stream erosion over time that reveals characteristics of the kind of rocks and geologic structures in a landscape region drained by streams.
- Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land.
- Dendritic
- Trellis
- Rectangular
- Radial



Drainage Systems in India

The Indian rivers are divided into two major groups:

- The Himalayan Rivers
- The Peninsular Rivers



The Himalayan rivers	The Peninsular rivers
Most of the Himalayan rivers are perennial which means they have water throughout the year.	Peninsular rivers are seasonal.
These rivers receive water from rain as well as from melted snow from high mountains.	The flow of these rivers is dependent on rainfall.
Two major Himalayan rivers, the Indus and the Brahmaputra originate from the north of the mountain ranges.	Most of the rivers of peninsular India originate in the Western Ghats and flow towards the Bay of Bengal.
The Himalayan rivers have long courses from their source to the sea.	These rivers have shorter and shallower courses as compared to Himalayan rivers.

The Himalayan Rivers

- A river along with its tributaries may be called a river system.
- The major Himalayan rivers are the Indus, the Ganga, and the Brahmaputra.

The Indus River System

- Rising near Lake Mansarovar in Tibet, the Indus enters India in the Ladakh district of Jammu and Kashmir.
- Zaskar, the Nubra, the Shyok are the tributaries in Kashmir.
- Rivers Satluj, Beas, Ravi, Chenab and Jhelum join Indus near Mithankot, Pakistan and flow southwards to fall into the Arabian Sea, east of Karachi.
- With a total length of 2900 km, the Indus is one of the longest rivers of the world.
- India and Pakistan have distributed Indus river water according to Indus Water Treaty in 1960.

The Ganga River System

- The headwaters of the Ganga are called 'Bhagirathi' is fed by the Gangotri Glacier and joined by the Alaknanda at Devprayag in Uttarakhand.
- Ganga meets the tributaries from the Himalayas such as Ghaghara, Gandak and Kosi.
- A major river Yamuna, arising from Yamunotri Glacier in the Himalayas, joins Ganga at Allahabad.
- Other tributaries — Chambal, Betwa and Son — come from Peninsular uplands to join Ganga.
- Farukka in West Bengal is the northernmost point of the Ganga Delta.
- Ganga is joined by Brahmaputra and forms river Meghna which flows through Bangladesh to reach the Bay of Bengal.
- The delta formed when the Ganga and the Brahmaputra flow into the Bay of Bengal is known as the Sunderban Delta.
- The length of the Ganga is over 2500 km and it develops large meanders in the downstream plain areas.

The Brahmaputra River System

- Originating in Tibet, very close to the sources of Indus and Satluj, Most of its course lies outside the India.
- On reaching Namcha Barwa it takes a 'U' turn and enters in Arunachal Pradesh to flow to Assam joined by many tributaries.

- The tributaries that join Brahmaputra are Dibang, Lohit, and Kenula.
- The Brahmaputra has a braided channel in its entire length in Assam to form many riverine islands. World's largest riverine island is found in Brahmaputra.
- Unlike other north Indian rivers, the Brahmaputra is marked by huge deposits of silt on its bed, causing the riverbed to rise.

The Peninsular Rivers

- Western Ghats form the main water divide in peninsular India.
- The major rivers of the peninsula — Mahanadi, Godavari, Krishna and Kaveri — flow eastwards to drain into the Bay of Bengal.
- The Tapi and Narmada are the only rivers which flow west to make estuaries and drain into the Arabian Sea.
- The drainage basins of the peninsular rivers are comparatively small in size.

The Narmada Basin

- Rising in the Amarkantak hills, Narmada flows to create a gorge in marble rocks of Madhya Pradesh.
- Narmada flows towards the west in a rift valley formed due to faulting.
- Near Jabalpur it flows in the form of deep gorge in the marble rocks and Dhuadhar falls are picturesque locations.

The Tapi Basin

- Originating in Betul, Madhya Pradesh in Satpura ranges,
- It also flows in a rift valley parallel to the Narmada but is much shorter than Narmada.
- Tapi flows through a basin that covers Madhya Pradesh, Gujarat and Maharashtra.

The main west flowing rivers are Sabarmati, Mahi, Bharathpuzha and Periyar.

The Godavari Basin

- Godavari begins in Nasik district of Maharashtra and is the largest peninsular river about 1500 km.
- Its large basin covers most parts of Maharashtra, Madhya Pradesh, Orissa and Andhra Pradesh.
- The tributaries which join the Godavari include Purna, Wardha, Pranhita, Manjra, Wainganga and Penganga.
- Because of its length and the area it covers, Godavari is also known as the Dakshin Ganga.

- Godavari drains into the Bay of Bengal.

The Mahanadi Basin

- The Mahanadi, a 860 km long river, rises in Chhattisgarh to flow through Orissa to reach the Bay of Bengal.
- Mahanadi river basin is shared by Maharashtra, Orissa, Jharkhand and Chhattisgarh.

The Krishna Basin

- The 1400 km long Krishna river rises from a spring near Mahabaleshwar to reach the Bay of Bengal.
- The tributaries of Krishna include Bhima, Musi, Ghatprabha, Koyana and Tungabhadra. The Krishna basin is shared by Maharashtra, Karnataka and Andhra Pradesh.

The Kaveri Basin

Originating in the Brahmagiri range of the Western Ghats, the Kaveri reaches the Bay of Bengal at Kaveripatnam, sharing its basin with Karnataka, Tamil Nadu and Kerala.

The river Kaveri makes second biggest waterfall in India known as Sivasamudram.

Other smaller rivers like Damodar, Brahmani, the Baitarani and Subarnlekha.

Lakes

- Most lakes are permanent while other contain water only during the rainy season.
- Some lakes are result of the glacial action and ice sheets and some may have been formed by wind, river action and human activities.
- A river meandering across a floodplain forms cut-offs that later develop into oxbow lakes.
- Glacial lakes are formed when glaciers dig out a basin which is later filled with snowmelt.
- Some lakes like Wular Lake in Jammu and Kashmir result from tectonic activity.
- Apart from natural lakes, the damming of the rivers for the generation of hydel power has also led to the formation of lakes.
- Lakes help to regulate river water flow, prevent flooding, aid to develop hydropower, moderate climate, maintain aquatic ecosystem, enhance natural beauty, develop tourism and provide recreation.

Role of rivers in the economy

- Rivers are natural sources of water.

- Settlements on the river banks have developed into cities.
- Rivers are used for irrigation, navigation, hydro-power generation, all vital for India, an agricultural economy.

River Pollution

- Quality of river water is affected by the growing domestic, municipal, industrial and agricultural demand.
- A heavy load of untreated sewage and industrial effluents are emptied into the river affecting the river's self-cleaning property.
- Concern over rising pollution in our rivers led to the launching of various action plans to clean the rivers.



MAP SKILL CHAPTER-3

