

Revision Notes Class 9
Social Science - Geography
Chapter 03 – Drainage

Drainage of a landmass refers to its river system. Small streams which flow from different directions usually come together to form the main river body. This river drains into a larger water body like a lake, sea, or ocean. The area which is drained by a single river system is termed a drainage basin. An elevated physical structure like a mountain or an upland sometimes separates two drainage basins. This physical feature is called the water divide.

Important Drainage Systems of India

1. The drainage systems in India are dominated by broad relief features.
2. The Indian rivers are categorized into two major groups-
 - a) **The Himalayan rivers:**
 - These rivers have water throughout the year and hence, they are perennial. They are snow-fed rivers and also receive water from rainfall.
 - The Ganga and the Brahmaputra are the two major rivers of this type, originating from the north.
 - They form gorges and cause intensive erosional activities in their upper courses; in the middle course, they meander and form oxbow lakes; the lower course is marked by the striking feature of deltas.
 - b) **The peninsular rivers:** The peninsular rivers are seasonal and depend on rainfall. They are shallower in comparison to the Himalayan rivers.
3. It can be rightly said that these two groups of rivers are different in many ways.

The Himalayan River Systems

Indus, Ganga and Brahmaputra are the three Himalayan rivers that form three major river systems of India. An account of these three rivers is given below:

1. Indus River System:

- The river Indus rises near Mansarowar in Tibet and flows west to enter India in Ladakh. There are tributaries like the Shyok, the Nubra, the Zaskar, and the Hunza, which join Indus in Kashmir. Indus emerges from the mountains in Attock after flowing through Baltistan and Gilgit.
- At Mithankot, Beas, Satluj, Ravi, Jhelum and Chenab join Indus. The Indus River eventually meets the Arabian Sea, east of Karachi. Indus is a very long river.

2. Ganga River System:

- Bhagirathi is the headwaters of river Ganga and it is fed by the Gangotri glacier. Alakananda joins it at Devprayag in Uttarakhand.
- Ganga rises at the confluence of Alaknanda and Bhagirathi and emerges on the plains at Haridwar. Ganga has a number of tributaries.
- The Yamuna is a right bank tributary of Ganga which originates from the Yamunotri glacier in the Himalayas.
- The other tributaries like Ghagra, Kosi, Gandak rise in Nepal. These tributaries flood the northern plains and severely damage life and property. These floods also help mankind by enriching the soil for agriculture.
- Chambal, Betwa, and Son arising from the semi-arid regions of peninsular India joins the Yamuna and hence are Ganga's tributaries as well.
- Ganga is, thus, enlarged with its tributaries. It flows eastward till the northernmost part of the Ganga delta, Farakka.
- At Farakka, Ganga bifurcates into Bhagirathi and Hooghly distributaries. These meet the Bay of Bengal.

- The mainstream flows into Bangladesh to be joined by the Brahmaputra to form Meghna which flows into the Bay of Bengal. These rivers form a delta known as the Sundarban.

3. Brahmaputra River System:

- The Brahmaputra arises near the Mansarowar lake in Tibet. Most of Brahmaputra's course lies out of India and it is a bit longer than Indus.
- The Brahmaputra flows parallel to the Himalayan range and is called Tsang Po. At a region called Namcha Barwa, it turns to enter Arunachal Pradesh. Streams named Dibang, Dihang, Lohit joins it to be called the Brahmaputra. It forms many riverine islands here.
- The Brahmaputra overflows to flood the banks of Assam.

The Peninsular River Systems

1. The Western Ghats serves as a water divide in the peninsular region.
2. Some of the rivers of this river system are east-flowing while some are west-flowing. Godavari, Krishna, Mahanadi, and Kaveri flow east to drain into the Bay of Bengal. There are many deltas formed by these rivers. Narmada and Tapi flow towards the west to drain into the Arabian Sea and form estuaries.
3. An account of these rivers are as follows—

a) Narmada Basin:

- The Amarkantak hills in Madhya Pradesh give rise to the Narmada River. Narmada flows west through a rift valley.
- Many wonderful places are associated with Narmada like the 'Marble rocks' near Jabalpur, the Dhauladhar Falls, etc.
- The basin formed by the Narmada River covers parts of Gujarat and Madhya Pradesh. The tributaries of the river are short and join it at right angles.

- b) **Tapi Basin:** Satpura gives rise to the Tapi river. It rises in Betul, Madhya Pradesh, and flows parallel to Narmada but is shorter. It flows through Gujarat, Madhya Pradesh, and Maharashtra.
- c) The Sabarmati, Bharathpuzha, Mahi, and Periyar are the other main west-flowing rivers here.
- d) **Godavari Basin:** The Godavari is also known as the 'Dakshin Ganga' as it is the largest Peninsular river. It rises in Nasik, Maharashtra at the Western Ghats and drains into the Bay of Bengal. The Godavari Basin is the largest river basin in South India. Maharashtra, Odisha, Madhya Pradesh, and Andhra Pradesh are drained by the Godavari. Purna, Manjra, Pranhita, Wainganga, and Penganga are its tributaries
- e) **Mahanadi Basin:** The highlands of Chhattisgarh give rise to Mahanadi which flows through Odisha to meet the Bay of Bengal. The Mahanadi basin drains Chhattisgarh, Jharkhand, Maharashtra, and Odisha.
- f) **Krishna Basin:** Krishna river rises from a spring near Mahabaleshwar. Its tributaries like the Koyana, Ghatprabha, Musi, Tungabhadra, and Bhima join it on its course. The Krishna Basin drains the states of Karnataka, Maharashtra, and Andhra Pradesh.
- g) **Kaveri Basin:** The Brahmagiri range of Western Ghats gives rise to the Kaveri river and it flows into the Bay of Bengal in the south of Cuddalore in Tamil Nadu. Amravati, Hemavati, Kabini, and Bhavani are tributaries that join Kaveri. The basin drains Tamil Nadu, Kerala, and Karnataka. Kaveri gives rise to India's second-biggest waterfall Shivasamudram.

Lakes in India

1. India has numerous lakes and they can be classified into the following types based on size and other features:
 - a) **Permanent lakes:** Many of the lakes in India are permanent and have water all year round.
 - b) **Non-permanent lakes:** There are also non-permanent lakes usually draining the semi-arid regions.

- c) **Glacial lakes:** These lakes form from glaciers and ice sheets.
- d) **Ox-bow lakes:** These are formed from meandering rivers.
- e) **Lagoons:** Lakes called lagoons are formed by spits and bars. Lake Chilka, Kolleru Lake, Pulicat Lake are few such lagoons.
- f) **Saltwater lakes:** Some lakes have saline water and are called saltwater lakes. The Sambhar Lake in Rajasthan is a saltwater lake that drains a dry area. It is used for salt production.
- g) **Freshwater lakes:** Lakes with freshwater are called freshwater lakes which are mostly glacial in origin and are found in the Himalayan belt. They are snow-fed. However, the largest freshwater lake of India, the Wuller lake located in Jammu and Kashmir is formed due to tectonic activity. The Dal Lake, Nainital, Loktak, Bhimtal and Barappani are some other freshwater lakes.
- h) **Man-made lakes:** These are lakes artificially created by man. There have been a few man-made lakes in India like the Guru Govind Sagar.

2. Lakes have numerous uses some of which are as follows:

- a) Lakes are indispensable to humans as they help in the regulation of the river flow.
- b) They are also used for the generation of hydroelectric power.
- c) A typical aquatic ecosystem is created surrounding the lake that helps to provide recreational opportunities, increase natural beauty, and opens the doors to the tourism development of the region.

Rivers and Their Role in the Economy

- 1. Rivers play a significant role in the country's economy. They are indispensable. Their significance is as follows—**
 - a) Rivers attract human settlements in their banks as their water is a necessity for human survival.
 - b) They are used in navigation.

- c) The water of rivers also aids in irrigation. This is, in fact, the most important function of rivers as in India agriculture is the prime economic activity for livelihood.
- d) Rivers help in hydroelectric power generation.

Pollution and River

1. River water has been increasingly used for agricultural, municipal, and domestic purposes for ages which resulted in the reduction of their volume.
2. Also, untreated pollutants like sewage and untreated pollutants are discharged into the rivers, thus polluting them and even decreasing their capacity of self-cleansing.
3. Industrialization and urbanization further increase the levels of river pollution.

Important Questions and Answers:

1. Enumerate the differences between the Himalayan and Peninsular rivers.

Ans: The Himalayan and Peninsular rivers can be differentiated as follows—

Himalayan rivers	Peninsular rivers
i. The Himalayan rivers are perennial.	i. The peninsular rivers are non-perennial.
ii. Himalayan rivers are much longer.	ii. Peninsular rivers are shorter as compared to their Himalayan counterparts.
iii. Most of the Himalayan rivers are snow-fed and do not completely depend on rainfall for water.	iii. The peninsular rivers depend largely on rainfall for water.
iv. Himalayan rivers do not have shallow courses.	iv. These rivers have much shallower courses.

2. How do rivers contribute to the country's economy?

Ans: Rivers play a significant role in the economy of the nation and contribute to it in the following ways—

- i. They have helped humans for ages. They have attracted settlers to settle on their banks and perform important economic activities like agriculture.
- ii. Water from rivers is used for irrigation, In India, rivers provide water for irrigation which is extremely important as the Indian economy is dependent mainly on agriculture.
- iii. Rivers also help in the production of hydroelectricity which is a renewable source of energy.
- iv. Rivers also aid in navigation.

3. What is the importance of lakes?

Ans: Lakes have great importance in various aspects. An account of it given below—

- i. Lakes help in controlling the river flow. During the dry season, they help maintain even water levels in the rivers. And in the rainy season, they help to prevent flooding.
- ii. They can be used for the generation of hydel power.
- iii. Lakes also serve as a source of recreation and help to develop tourism around them.
- iv. Lakes enhance the natural beauty of a place and have their own aquatic micro-ecosystem and biodiversity.

4. Write a short note on river pollution.

Ans: River pollution can be elaborated as follows—

- i. River water is used for domestic, municipal, and agricultural purposes. This has resulted in the reduction of water volume in these rivers.

- ii. On the contrary, heavy loads of untreated pollutants were discharged into the rivers. These include sewage, industrial effluents, agricultural wastes, etc. This affects water quality and its capacity for self-cleansing.
- iii. Urbanization and industrialization further added to the pollution of the river bodies.
- iv. A lot of programs and action plans have been launched to reduce river pollution and water pollution at large as clean water is indispensable for human survival hence water pollution is a grave cause of concern for human beings.

5. How are the eastward flowing and westward flowing peninsular rivers different from each other?

Ans: The eastward flowing and westward flowing peninsular rivers are different from each other in the following ways:

Eastward Flowing Rivers	Westward Flowing Rivers
i. The eastward flowing rivers in the peninsular region are generally longer as compared to the westward flowing rivers	i. The westward flowing rivers in the peninsular region are generally shorter with Narmada and Tapi being exceptions.
ii. The eastward flowing rivers form deltas near the mouth.	ii. The westward flowing rivers do not form Delta at the mouth.
iii. The eastward flowing rivers meet the Bay of Bengal.	iii. The westward flowing rivers meet the Arabian Sea.

6. Write about the National River Conservation Plan.

Ans: The National River Conservation Plan can be elaborated as follows—

- i. This plan has the objective of reducing water pollution and improve the quality of river waters.

- ii. The National River Conservation Plan which has now been merged with the Ganga Action Plan phase II covered under it 152 towns, 27 interstate rivers in 16 states.
- iii. This plan had initiated pollution abatement activities in 57 towns.
- iv. There were 215 schemes of pollution reduction under this plan that were sanctioned.
- v. 69 schemes have so far been completed.
- vi. A lot of sewage water has been treated under this plan.

7. Write a short note on the various drainage patterns.

Ans: The various drainage patterns are—

- i. Dendritic- Dendritic pattern develops on the slope of the terrain. The complete system resembles branches of a tree hence named dendritic.
- ii. Trellis- The trellis drainage pattern develops when the tributaries join the river at right angles. This type of drainage pattern develops when soft and hard rocks lie parallel to each other.
- iii. Rectangular- A strongly jointed rocky terrain develops a rectangular drainage system.
- iv. Radial- In a radial drainage system, streams rise from an elevated area and flow in different directions.

8. Write a short note on the Indus River system.

Ans: The river Indus rises near Mansarowar in Tibet and flows west to enter India in Ladakh. There are tributaries like the Shyok, the Nubra, the Zaskar, and the Hunza, which join Indus in Kashmir. Indus emerges from the mountains in Attock after flowing through Baltistan and Gilgit. At Mithankot, Beas, Satluj, Ravi, Jhelum and Chenab join Indus. The Indus River eventually meets the Arabian Sea, east of Karachi. Indus is a very long river. India can use only 20 percent of India's water which is used for irrigation in Haryana, Punjab, and parts of Rajasthan.