

Chapter 3: Drainage

Concepts: 1.Drainage System in India 2.The Himalayan Rivers 3.The Peninsular Rivers 4. Lakes 5.Role of River in the Economy 6.River population

Summary of the chapter:

- A drainage or river basin refresh to the area which is drained by a single river system.
- The way the rivers, their distributaries are arranged on the surface of the land is known as the drainage. The raised land the divides two adjoining drainage basins is known as water divide or water shed.
- Based on the environment conditions in different regions such as type of underlying rock, climate and even human activity, the basic patterns of river drainage are recognized by their geometrical shapes.
- Trellised Drainage Pattern is formed by the network of tributaries and distributaries that follow the regional slope of the land and are adjusted by the nature of underlying rocks.
- Dendritic Drainage Pattern is a tree-shaped drainage pattern and is commonly found in the mountainous and hilly areas and on extensive plateau surfaces like in the Deccan Plateau.
- In Radial Drainage Pattern, the rivers tend to flow from a central higher point in all directions, like the spokes of a cycle-wheel.
- The Hazaribagh plateau o Jharkhand, Mt.Abu in Rajasthan and upland areas to the south west of Ranchi have given birth to the Radial drainage pattern.
- On the basis of a drainage basin study and drainage pattern, and rivers of India can be divided into two main river systems- the Himalayan River System and the Peninsular River System.
- The Himalayan River System can be divided into three main drainage system-Indus, Ganga and Brahmaputra.

- The rivers of Peninsular India divide the whole landmass into nine river basins.
- The largest of these are the Godavari and Krishna river basins, extending from western to eastern parts of the Plateau region.
- All the main Peninsular Rivers originate in the Western Ghats and flow in a west-east direction to join the Bay of Bengal.
- Inland drainage is also known as internal drainage.
- The chief role of Indian rivers is the formation of alluvial soils; building of multi- purposes projects, providing drinking water, moderating climate and the formation of lakes and wetlands.
- Discharge of waters, soil erosion, surface run-off and destruction of dams are the main reasons for the pollution of rivers.
- In order to control river pollution, the government has improved vegetation cover, provided better management of water resources and created a national water grid for proper water management.

VERY SHORT ANSWER TYPE QUESTIONS

1. What is a water divide?

Ans. The raised land or any elevated area which divides two adjoining drainage basins is known as water divide.

2. Explain the meaning of the term 'drainage'.

Ans. The term 'drainage' refers to an area drained by a single river system.

3. Which is the longest river of India?

Ans. The Ganga is the longest river of India.

4. Define Perennial Rivers. Or which river is known as Perennial River?

Ans. The rivers which flow throughout the year are called perennial rivers.

5. The drainage system of which river resembles the branches of a tree?

ANS. Ganga river.

6. Which river is called Dakshin Ganga?

Ans. River Godavari is also famous as Dakshin Ganga.

7. Where is Dal Lake located?

Ans. It is located in the state of Jammu and Kashmir.

8. Which is the largest fresh water lake in India?

Ans. Lake Wular is the largest fresh water lake in India.

9. Where is lake Chilka located?

Ans. It is located in Odisha.

10. Which river originates from Himachal Pradesh and joins the Indus?

Ans. River Chenab originates from Himachal Pradesh and joins the Indus.

11. Which rivers flow through a rift valley?

Ans. Rivers Tapi and Narmada flows through a rift valley.

12. Which place is the meeting point of river Ganga and Yamuna?

Ans. Allahabad in Uttar Pradesh is the meeting point of river Ganga and Yamuna.

13. Name the important tributaries of Kaveri.

Ans. The important tributaries of river Kaveri are Ameravati, Bhavani and Hemavati.

14. From where does river Brahmaputra rise?

Ans. It rises from Mansarovar Lake near Tibet.

15. On which river is the Marble falls located?

Ans. River Narmada.

16. On which river is the Shivsamudram falls located?

Ans. It is located on river Kaveri.

17. From where does Krishna river rise?

Ans. River Krishna rises from Mahabaleshwar.

18. Which river rises from the Yamunotri glacier?

ANS. River Yamuna rises from the Yamunotri glacier

19. What is the length of River Ganga?

Ans. The length of river Ganga is approximately 2,500 km.

20. Which type of drainage pattern is made by the Narmada river?

Ans. Trellis pattern is made by the river Ganga.

21. Name the most important river flowing through Odisha.

Ans. River Narmada.

22. Name two salt water lakes on the eastern coast of India.

Ans. Two salt water lakes on the eastern coast are Chilka Lake and Pulicat Lake.

23. Name the place where Yamuna joins Ganga river.

Ans River Yamuna joins river Ganga at Allahabad.

24. What name is given to the Ganga-Brahmaputra Delta?

Ans.It is called Sunderbans.

25. What is lagoon?

Ans. A lake of water that is separated from the sea by an area of rock or sand is called a lagoon.

26. Define dendritic river pattern.

Ans.A tree shaped drainage pattern is referred to as a dendritic river pattern.

27. What is a delta?

Ans. A triangular shaped flat plain of alluvial deposit at the mouth of a river is called a delta.

28. When was Indus water treaty signed?

Ans.Indus water treaty, between India and Pakistan, was signed in 1960.According to this treaty, India can use only 20% of total water available in the river

29. Which two peninsular rivers flow through a trough?

Ans. Narmada and Tapi.

ANSWER THE FOLLOWING QUESTIONS BRIEFLY

Q 1.Which is the largest river basin in India?

ANS. India.The Ganga River is 2,525 km. long and the Brahmaputra River is 2,900 km .long. The two rivers join together to form the largest delta of the world.

Q 2.What is meant by water –divide? Give an example.

ANS.A raised area separating the head streams of two different river systems is called a water-divide or water-shed. In India, the Ganga river system flows eastward and drains into the Bay of Bengal, while the Indus river system flows westward and drains into the Arabian Sea..The area near Ambala with a height of 283 meters is the water divide between the Ganga and the India. It separates two drainage basins.

Q 3.Where do the river Indus and Ganga have their origin?

ANS. River Indus and Ganga are Himalayan Rivers.

- a) River Indus rises in Tibet near Lake Mansarovar.
- b) B) River Ganga rises from the Gangotri Glacier.

Q 4. Name the two headstreams of the Ganga. Where do they meet to form the Ganga? **ANS.** The head waters of the Ganga called the Bhagirathi is fed by the Gangotri and is joined by the Alaknanda at Devprayag in Uttarakhand. The two join to form the Ganga River.

Q 5. Why does the Brahmaputra in its Tibetan part have less silt, despite a longer course? **ANS.** A part of the Brahmaputra lies in Tibet and it enters India in Arunachal Pradesh. The river is called Tsangpo in Tibet. Here the volume of water of the river is less and has less silt. But in India, the river has large volume of water and more silt. The river has a braided channel in Assam.

Q 6. State some economic benefits of rivers and lakes.

ANS. Economically, rivers are very benefits for a nation's economy. Rivers provide us valuable resources such as alluvial soils, water for irrigation facilities, water transports in coastal regions, etc. Recreation tourist promotion and fishing are also being developed along water fronts to gain economic benefits.

Q7. Compare the east flowing and the west flowing rivers of the Peninsular Plateau.

ANS. East flowing Rivers

- 1) The Mahanadi, Godavari, Kaveri are East flowing rivers.
- 2) These rivers form deltas on the East coast.
- 3) These rivers fall into the Bay of Bengal.

West flowing rivers

1) The Narmada and Tapi are West flowing rivers. 2) These rivers form estuaries on the West coast. 3) These rivers fall into the Arabian Sea.

Q 8.What do you mean by Trans-Himalayan Rivers? Give three examples from India.

ANS. Trans –Himalayan Rivers refers to the rivers rising beyond the great Himalayas .After cutting deep gorges in the great Himalayas, the river flows into the Indian sub-continent. Indus, Satluj and Brahmaputra are three trans-Himalayan rivers.

- 1) The Indus flows parallel to the great Himalayas and turns southward.
- 2) The Brahmaputra also flows parallel to the Himalayas in Tibet and takes bend, entering into Arunachal Pradesh.
- 3) The Satluj making a deep gorge flows over the Punjab plains.

Q 9. Why is Godavari river often referred to as ‘Dakshina Ganga’ or ‘ Vridha Ganga’?

ANS. The Godavari is the longest river among the Peninsular rivers .It has an extensive drainage basin .Its drainage basin extends through Maharashtra, Madhya Pradesh, Karnataka, Odisha, Telagana Andhra Pradesh .Due to its large size and extent it is compared to river Ganga. It has the same culture significance in peninsular India which the Ganga has in the northern plains. Therefore,it is referred to as Dakshina Ganga or Vridha Ganga.

Q 10. Describe the importance of drainage pattern.

- 1) It throws light on the evolution of river systems
- 2) It shows the flow of water in the river for a part or throughout the year.
- 3) If the drainage pattern is well developed, a river may have enough water to reach the sea or make inland lakes or salt lakes.

LONG ANSWER TYPE QUESTIONS

Q 1.Why are the rivers considered the lifelines of humans civilisatin?

ANS. A river is an important part of land. 1) It carries water, sediments and dissolved minerals.2) Estuaries are important fishing grounds.3) The early

man developed the occupations of hunting and gathering along the river banks.4) Water is necessary for pastoral and agriculture activities.5) Towns are located on the banks of rivers and serve as waterway and means of commerce.

These generate water power and provide canal irrigation. The earliest civilisations like Indus and the Egyptians settled along the banks of rivers So, rivers are called the lifelines of human civilization.

Q 2.Why are rivers important for the country's economy? OR Explain the role of rivers in the economy of qa country.

ANS. A) **Cultural Importance:** Rivers have been of fundamental importance throughout human history. And the areas along the banks of rivers have witnessed great cultural and economic progress since ancient times. Rivers are an integral part of our folk songs.

B)Natural Resource: Water from the rivers is a basic natural resource, essential for human, agricultural and industrial activities.

c) **Agricultural Areas:** Rivers and their associated alluvial soil provide the most productive agricultural lands of the country. The Ganga, the Kaveri and deltas have traditionally been the rice growing areas. Agriculture dependent on the variability of the monsoons, irrigation from rivers has been the backbone of the development of Indian agriculture.

d) **Settlements** The valleys contain dense and concentrated settlements. Most of the large cities are located on rivers .Not only do rivers provide us with essential water supplies, but they also receive, dilute and wash away wastes from settlements

e) **Industrial Development:** Industrial development has flourished along the rivers as many industrial processes rely on water-as a raw material channels, as a coolant and for through generation of hydroelectricity.

- f) **Transportation:** Rivers provide channels of inland transportation, not only directly in the form of navigable waterways, but also indirectly through their valleys, where roads, railway lines and other routes are built.
- g) **Tourism:** Recreation tourist promotion and fishing are also being developed along water ways.

Q 2. Describe the main rivers of northern India and its drainage systems.

ANS. India's agricultural economy depends upon rivers. India has been often called a 'land of rivers'. Vindhyas act as a water divide between the rivers of Northern India and the Peninsular India.

Drainage System of Northern India (HIMALAYAN RIVERS)

The drainage system extends from Punjab to Assam and is divided into three systems;

- a) **The Indus Drainage System:** It is one of the world's largest systems. The river Indus in Tibet near lake Mansarovar and enters India in Ladakh .It comprises the river of Jhelum, Chenab, Ravi,
- b) Sutlaj, and BEAS. Indus, Jhelum and Chenab flow in Pakistan.
- c) **The Ganga Drainage System:** The Ganga is the most sacred river of India. The story of the Ganga from her source to the sea, from old times to new is the story of India's civilization and culture. The Ganga is formed by two head streams namely Alaknanda and Bhagirathi. It enters the plains near Haridwar. The Yamuna meets this river at Allahabad known as sangam.
- d) **The Brahmaputra System:** The Brahamaputra river is the master stream of this system. It is 2,880 km long It flows parallel to the Himalayas in Tibet where it is known as Tsang-po. It enters India in Arunachal Pradesh through the Dihand gorge .It is known for its notorious floods and silt deposits. It joins the Padma River in Bangladesh to form a large delta.

Q 3. Explain the drainage system of Peninsular India (drainage basin> The area drained by a single river system.)

ANS. Most of the Peninsular Rivers are seasonal. These flow through narrow, deep valleys. These rivers can be divided into two categories;

a) The rivers draining into the Arabian Sea:

1. **The Narmada:** It rises from the Amarkantank Plateau in Madhya Pradesh. It flows through a rift valley between the Vindhyas and Satpuras Kapildhara falls, Marble rocks and Dhuandhar falls are important .It does not form a delta on the western coast.
2. **The Tapi:** It rises near Betul in the Mahadeo Hills. It is 724km long. It flows through a rift valley. Looni, Sabarmati and Mahi are the other main rivers draining into the Arabian Sea.

b) The rivers draining into Bay of Bengal:

- 1) **Damodar River:** The Damodar, 530km long, rises from the Chotta Nagpur Plateau. On account of its floods, it is called the 'Sorrow of Bengal'. D.V.C. Project is a multipurpose project to get benefits from this river
- 2) **The Mahanadi:** It is 857 km long. It emerges from Amarkantak Plateau. It is a navigable river and forms a fertile delta.
- 3) **The Godavari:** It is 1,440 km long and rises from the Western Ghat It is the longest river of the Peninsula .It forms a fertile delta on the East Coast.
- 4) **The Krishna:** It is 1,400 km long. It rises near Mahabaleshwar in the Western Ghats. Its tributaries- Bhima and Tungbhadra are important.
- 5) **The Kaveri:** It rises in Brahmgiri in the Coorg district. It is 800 km long and is useful for irrigation, navigation and water power development. The famous Shivsamudaram falls lie on this river. It forms a fertile delta on the East Coast.

Q 4.Describe the different types of lakes found in India.

Ans. A depression on the surface of the earth, where water collects, is known as Lake .Lakes is of two types -1.permanent 2.Seasonal.

Although most lakes are permanent, some maintain the water flow only during the wet season.

- A) **Glacial Lakes:** A majority of lakes are the result of the action of glaciers and ice sheets, while the others have been formed by wind, river action and human activities. Valley glaciers and ice sheets carve out hollows and troughs on the surface of the earth, which may later fill with water to form lakes, eg. Wular and the Dal Lake in Jammu and Kashmir.
- B) **Lakes in arid regions:** Wind deflation also produces extensive depression in arid regions. These depressions if extended below the water table, a lake would be formed eg; Gadisar lake in Jaisalmer.
- C) **Ox- bow Lakes:** A meandering river across a flood plain cut-offs from the main river that later develops into an Ox-bow lake.
- D) **Lagoons:** Spits and bars form lagoons in the coastal area, like the Chilka Lake.(odisha), the Pulicat Lake (Tamil Nadu) and the Kolleru Lake (Andhra Pradesh).
- E) **Saine Lakes:** Lakes in the region of inland drainage are sometimes seasonal, for example, the Sambhar lake in Rajasthan ,which is a salt water lake.
- F) **Dam Lakes:** The damming of the rivers for the generation of hydel power has also led to the formation of a lake like water reservoir e.g.; Guru Govind Sagar (Bhakra Nangal Project).

Q 5. How are Peninsular Rivers different from Himalayan rivers? Give three or five points to distinguish.

ANS.Himalayan Rivers

1. These rivers rise from the snow-covered Himalayan and hence these are powerful.
2. These rivers do not have any waterfalls. Hence, these are not useful for generation.
3. The Himalayan Rivers have large basins and extensive catchment areas. Therefore, these have a large volume of water.
4. These rivers flow over plains. Therefore; these are useful for irrigation and navigation.
5. These rivers form vast alluvial plains by depositing

sediments.6. Many important towns have developed on the course of these rivers.

Rivers of the Peninsular: 1. The Peninsular Rivers are seasonal. They get supply of water from summer rainfall.2. These rivers make waterfalls and cataracts on the plateau. Hence, these are useful for hydro-electric projects. 3. The peninsular rivers have small basins and small catchment areas. Therefore, these do not have a large volume of water. 4. These rivers flow on rocky areas and are not used for irrigation and navigation. 5. These rivers do not bring fertile alluvium and do not form alluvial plains. 6. Very few towns have developed on the banks of these rivers.

