

## Chapter 3- Drainage

### 1. What is meant by a drainage basin?

The area drained by a single river system is called a ***drainage basin***.

### 2. What is a water divide?

Any elevated area, such as a mountain or upland, separates two drainage basins is known as a ***water divide***.

### 3. How are Indian rivers divided? / Distinguish between Himalayan and peninsular rivers.

i) Most of the Himalayan Rivers are perennial. It means that they have water throughout the year. These rivers receive water from rain as well as from melted snow from the lofty mountains where as a large number of the peninsular rivers are seasonal, as their flow is dependent on rainfall. During the dry season, even the large Peninsular rivers have reduced flow of water in their channels.

ii) The Himalayan Rivers have cut through the mountains making gorges where as Peninsular rivers do not.

iii) The Himalayan rivers have longer courses from their source to the sea compared to the Peninsular rivers.

iv) The Himalayan rivers perform intensive erosional activity in their upper courses and carry huge loads of silt and sand where as peninsular rivers do not.

v) In the middle and the lower courses, the Himalayan rivers form meanders, oxbow lakes, and many other depositional features in their floodplains where as peninsular rivers do not.

vi) The Himalayan Rivers have well-developed deltas.

### 4. What is a gorge?

A gorge is a deep narrow channel created by flowing water.

### 5. State any two depositional features of Himalayan Rivers.

Ox bow lakes, meanders, riverine islands.

## **6. What are the features of Indus river system?**

a) The river Indus rises in Tibet, near Lake Mansarowar. Flowing west, it enters India in the Ladakh district of Jammu and Kashmir. It forms a picturesque gorge in this part.

b) The Sutlej, the Beas, the Ravi, the Chenab and the Jhelum join together to enter the Indus near Mithankot in Pakistan. Beyond this, the Indus flows southwards eventually reaching the Arabian Sea, east of Karachi.

c) With a total length of 2900 km, the Indus is one of the longest rivers of the world. A little over a third of the Indus basin is located in India in the states of Jammu and Kashmir, Himachal Pradesh and the Punjab and the rest is in Pakistan.

## **7. What are the features of Ganga river system?**

i) The headwaters of the Ganga, called the 'Bhagirathi' is fed by the Gangotri Glacier and joined by the Alaknanda at Devaprayag in Uttaranchal. At Haridwar the Ganga emerges from the mountains on to the plains.

ii) The Ganga is joined by many tributaries from the Himalayas, a few of them being major rivers such as the Yamuna, the Ghaghara, the Gandak and the Kosi.

iii) The main tributaries, which come from the peninsular uplands, are the Chambal, the Betwa and the Son. These rise from semi arid areas, have shorter courses and do not carry much water in them.

iv) Enlarged with the waters from its right and left bank tributaries, the Ganga flows eastwards till Farakka in West Bengal. This is the northernmost point of the Ganga delta.

v) The river bifurcates here; the Bhagirathi-Hooghly (a distributary) flows southwards through the deltaic plains to the Bay of Bengal. The mainstream flows southwards into Bangladesh and is joined by the Brahmaputra.

f) Further downstream, it is known as the Meghna. This mighty river, with waters from the Ganga, and the Brahmaputra, flows into the Bay of Bengal.

vi) The length of the Ganga is over 2500 km. The river develops large meanders

## **8. What are the features of the Brahmaputra river system?**

i) The Brahmaputra rises in Tibet east of Mansarowar Lake very close to the sources of the Indus and the Sutlej.

ii) It is slightly longer than the Indus, and most of its course lies outside India.

iii) It flows eastward parallel to the Himalayas. On reaching the Namcha Barwa, it takes a 'U' turn and enters India in Arunachal Pradesh through a gorge. Here, it is called the Dihang and it is joined by the Dibang, the Lohit, the Kenula and many other tributaries to form the Brahmaputra in Assam.

iv) In Tibet the river carries a smaller volume of water and less silt as it is a cold and a dry area.

v) In India it passes through a region of high rainfall. Here the river carries a large volume of water and considerable amount of silt.

vi) Every year during the rainy season, the river overflows its banks, causing widespread devastation due to floods in Assam and Bangladesh.

vii) Unlike other north Indian rivers the Brahmaputra is marked by huge deposits of silt on its bed causing the river bed to rise. The river also shifts its channel frequently.

## **9. What are the features of river Narmada?**

The Narmada rises in the Amarkantak hills in Madhya Pradesh. It flows towards the west in a rift valley formed due to faulting. On its way to the sea, the Narmada creates many picturesque locations. The 'Marble rocks', near Jabalpur where the Narmada flows through a deep gorge, and the 'Dhuadhar falls' where the river plunges over steep rocks, are some of the notable ones. All the tributaries of the Narmada are very short and most of these join the main stream at right angles. The Narmada basin covers parts of Madhya Pradesh and Gujarat.

## **10. What are the features of river Tapi?**

The Tapi rises in the Satpura ranges, in the Betul district of Madhya Pradesh. It also flows in a rift valley parallel to the Narmada but it is much shorter in length. Its basin covers parts of Madhya Pradesh, Gujarat and Maharashtra.

## **11. What are the features of River Godavari?**

The Godavari is the largest Peninsular River. It rises from the slopes of the Western Ghats in the Nasik district of Maharashtra. Its length is about 1500 km.

It drains into the Bay of Bengal. Its drainage basin is also the largest among the peninsular rivers. The basin covers parts of Maharashtra Madhya Pradesh, Orissa and Andhra Pradesh. The Godavari is joined by a number of tributaries such as the Purna, the Wardha, the Pranhita, the Manjra, the Wainganga and the Penganga. Because of its length and the area it covers, it is also known as the 'Dakshin Ganga'.

## **12. What are the features of River Mahanadi?**

The Mahanadi rises in the highlands of Chhattisgarh. It flows through Orissa to reach the Bay of Bengal. The length of the river is about 860 km. Its drainage basin is shared by Maharashtra, Chhattisgarh, Jharkhand, and Orissa.

## **13. What are the features of River Krishna?**

Rising from a spring near Mahabaleshwar, the Krishna flows for about 1400 km and reaches the Bay of Bengal. The Tungabhadra, the Koyana, the Ghatprabha, the Musi and the Bhima are some of its tributaries. Its drainage basin is shared by Maharashtra, Karnataka and Andhra Pradesh.

## **14. What are the features of River Kaveri?**

The Kaveri rises in the Brahmagiri range of the Western Ghats and it reaches the Bay of Bengal in south of Cuddalore, in Tamil Nadu. Total length of the river is about 760 km. Its main tributaries are Amravati, Bhavani, Hemavati and Kabini. Its basin drains parts of Karnataka, Kerala and Tamil Nadu.

## **15. How do lakes differ from each other?**

Lakes differ from each other in the size, and other characteristics. Most lakes are Permanent; some contain water only during the rainy season, like the lakes in the basins of inland drainage of semi-arid regions. There are some of the lakes which are the result of the action of glaciers and ice sheets, while the others have been formed by wind, river action, and human activities. Wular lake in Jammu & Kashmir is the result of tectonic activity. It is the largest fresh water lake in India.

## **16. What are the uses of lakes?**

- i) Lakes are of great value to human beings. A lake helps to regulate the flow of a river. During heavy rainfall, it prevents flooding and during the dry season, it helps to maintain an even flow of water.
- ii) Lakes can also be used for developing hydel power. Guru Gobind Sagar (Bhakra Nangal Project) is a lake formed by damming of a river for generating hydel power.
- iii) They moderate the climate of the surroundings; maintain the aquatic ecosystem, enhance natural beauty, help develop tourism and provide recreation.

## **17. How is an ox-bow lake formed?**

A meandering river across a flood plain forms cut-offs that later develops in to oxbow lakes.

## **18. What is the role of rivers in the economy? ( Economic benefit of rivers)**

- i) Rivers have been of fundamental importance throughout the human history. Water from the rivers is a basic natural resource, essential for various human activities.
- ii) The river banks have attracted settlers from ancient times. These settlements have now become big cities.
- iii) Using rivers for irrigation, navigation, hydro-power generation is of special significance – particularly to a country like India, where agriculture is the major source of livelihood of the majority of its population.

## **19. How do rivers get polluted?**

- a) The growing domestic, municipal, industrial and agricultural demand for water from rivers naturally affects the quality of water.
- b) As a result, more and more water is being drained out of the rivers reducing their volume. On the other hand, a heavy load of untreated sewage and industrial effluents are emptied into the rivers. This affects not only the quality of water but also the self-cleansing capacity of the river.
- c) But the increasing urbanisation and industrialisation do not allow it to happen and the pollution level of many rivers has been rising.
- d) Concern over rising pollution in our rivers led to the launching of various action plans to clean the rivers