



# **Class 9 Geography Notes**

## **Drainage**



**Key Notes and Important Questions with Answers**

## CHAPTER- 3

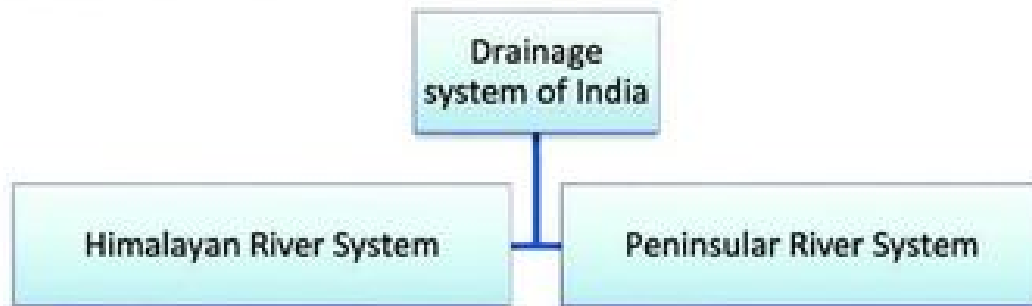
### DRAINAGE

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#### POINTS TO REMEMBER :

- The term **Drainage** describes the river system of an area.
- The area drained by a single river system is called a **Drainage Basin**.
- The world's largest drainage basin is of **Amazon River**.
- Any elevated area like mountain or an upland which separates two drainage basins is called **water divide**.
- The streams within a drainage basin form certain pattern called **drainage pattern**.
- The four types of drainage pattern are-
  - ✚ Dendrite
  - ✚ Trellis
  - ✚ Rectangular
  - ✚ Radial
- The river which is filled with water throughout the year is called **Perennial River**.
- A river along its tributaries is called **river system**.
- The small river which joins a large river is called the **tributary** of the large river. eg. Yamuna, Kosi, Gandak etc. are the tributaries of Ganga River.
- In its lower course river water is divided into many channels forming **distributaries**. Eg. Bhagirathi- Hoogly is the distributaries of Ganga river.
  - I. In its **upper course** the speed of water is very high so it cuts the valley to form waterfall, V-shaped valley, rapids, gorges and canyon and carries silt with them.
  - II. In their **middle course** vertical erosion gives way to side erosion and hence forms alluvial fans, alluvial plains meander etc.
  - III. In its **lower course** rivers loses its carrying capacity due to absence of slope and hence deposit all its silt and debris to form flood plain, braided channels, ox-bow lakes, delta etc.

- Drainage system in India-



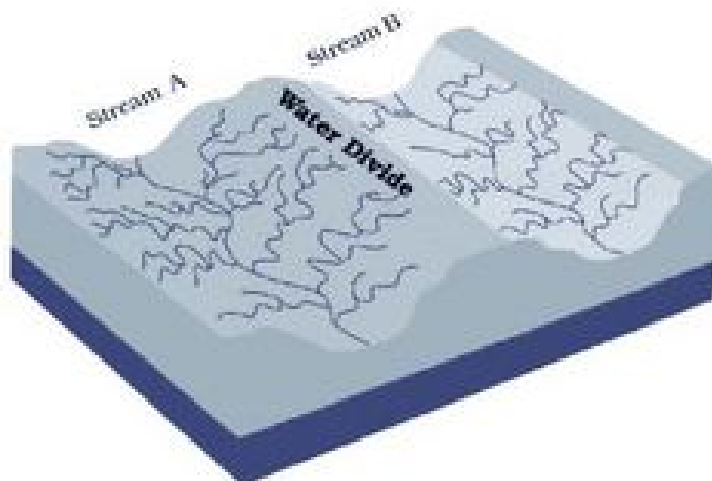
- Difference between Himalayan and Peninsular River System-

| Himalayan River System                                                              | Peninsular River System                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------|
| They are perennial (water throughout the year) as they are fed by the melting snow. | They are seasonal as they are fed on rain-water.             |
| They have long course.                                                              | They have shorter course.                                    |
| They are mostly flown through unstable areas of new fold mountains of Himalaya.     | They are mostly flown through stable areas of Gondwana land. |
| They perform high erosion and depositional work in their course.                    | They don't perform these activities on such scale.           |

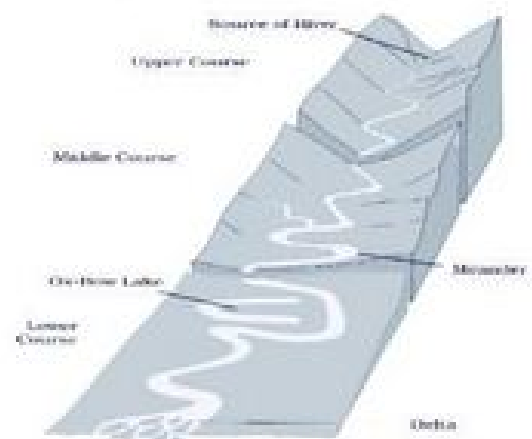
- The headwater of Ganga, called **Bhagirathi**, is joined by **Alaknanda** River at **Devaprayag** in Uttarakhand.
- At **Haridwar** the Ganga emerges from the mountains on to the plains.
- **Brahmaputra River** rises in **Tibet** east of **Mansarovar Lake** where it is known as '**Tsang Po**'.
- The Brahmaputra River enters India in **Arunachal Pradesh** where it is called '**Dihang**'.
- . In Tibet Brahmaputra River carries less volume of water and less silt as it passes through cold and dry area
- In Bangladesh it is known as '**Jamuna**'.
- In peninsular India west flowing rivers are **Narmada** and **Tapti** which forms **Estuaries** instead of delta.
- **Godavari River** is also called the "**Dakshin Ganga**".
- **Narmada River** originates from **Amarkantak Hills** in Madhya Pradesh and form '**Dhuadhar waterfall**' near Jabalpur (M.P.).

- River Kaveri makes the second biggest waterfall in India called- 'Shivsamudram'.
- India's biggest waterfall is **Jog waterfall** on **Sharavati** River in Karnataka.
- Lakes are not only a place of scenic beauty but also have socio-economic importance like-
  - I. Encourages Tourism
  - II. Generation of hydroelectricity.
  - III. Regulates the flow of river water.
  - IV. During excessive rainfall it controls the flood whereas during draught it ensures the supply of water.
  - V. Helps in balancing the aquatic ecosystem.
  - VI. They are also a source of salt manufacturing site.

- **Some important Diagrams:-**

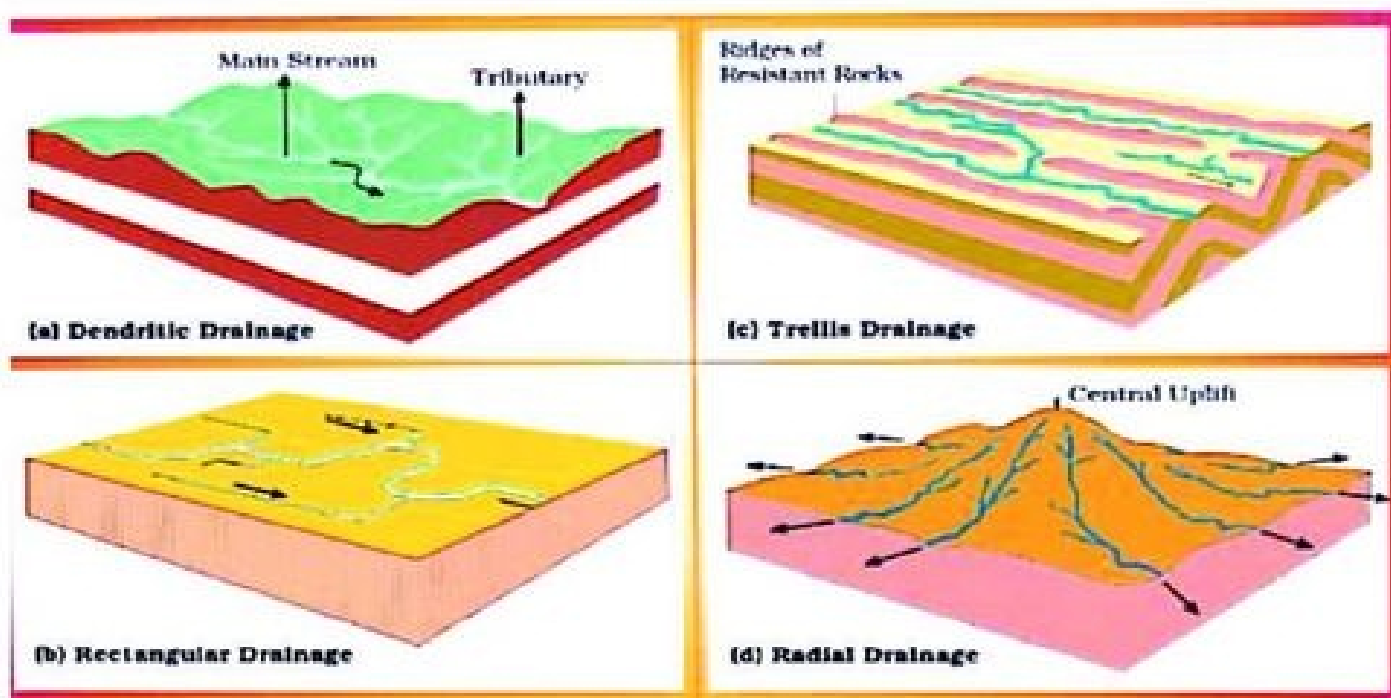


**1. Water Divide**



*Figure 3.3 : Some Features Made by Rivers*

**2. Pattern made by river**



### 3.Drainage Pattern

- Some information about river systems of India-**

| Drainage Basin | Origin                      | Length  | Tributary Rivers                                    | Drainage area                                       | characteristics                                                                                                                |
|----------------|-----------------------------|---------|-----------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Indus          | Mansarovar lake (Tibet)     | 2900 km | Sutlej, Beas, Ravi, Chenab, Jhelum                  | Jammu & Kashmir, Himachal Pradesh, Punjab, Pakistan | 1. One of the longest rivers of world.<br>2. Enters India in Ladakh,<br>3. flows to Pakistan and drains in Arabian Sea.        |
| Ganga          | Gangotri Glacier (Himalaya) | 2500 km | Yamuna, Ghaghara, Gandak, Kosi, Chambal, Betwa, Son | Uttarakhand, Uttar Pradesh, Bihar, Bengal           | 1. Ambala is located on the water divide between Ganga and Brahmaputra river system,<br>2. average slope is 1m for every 6 km. |

|             |                                      |         |                                            |                                                                 |                                                                                                                                                                                                   |
|-------------|--------------------------------------|---------|--------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                      |         |                                            |                                                                 | 3.The main stream of Ganga and Brahmaputra river form River Meghna in Bangladesh.                                                                                                                 |
| Brahmaputra | Mansarovar Lake (Tibet)              | 2900 km | Dihang, Lohit                              | Tibet, Arunachal Pradesh, Assam, Bangladesh                     | 1.It is slightly longer than Indus River.<br>2.Most of its course lies outside India parallel to Himalaya.<br>3.On reaching Namcha Barwa it takes "U" turn and enters India in Arunachal Pradesh. |
| Narmada     | Amarkantak Hills (Madhya Pradesh)    | 1312 km | Sakkara, Dudhi, Tawa, Ganjal               | Madhya Pradesh , parts of Gujarat                               | 1.Forms Gorge in marble hills, and "Dhuandhar waterfall"                                                                                                                                          |
| Tapti       | Satpura range (Madhya Pradesh)       | 724 km  | Purna, Girna, Panjhra                      | Madhya Pradesh , Gujarat, Maharashtra                           | Flows parallel to Narmada river through rift valley.                                                                                                                                              |
| Godavari    | Slope of Western Ghats (Maharashtra) | 1500 km | Purna, wardha, prahinta, manjara, Vanganga | Maharashtra , Madhya Pradesh, Orissa, Andhra Pradesh, Telangana | Longest river of south India. Also known as "South Ganga"                                                                                                                                         |
| Mahanadi    | Highland of Chhattisgarh             | 800 km  | Shivnath, Mand, Daya                       | Orissa, Maharashtra ,                                           | Drains in Bay of Bengal                                                                                                                                                                           |

|         |                                     |            |                                                   |                                              |                         |
|---------|-------------------------------------|------------|---------------------------------------------------|----------------------------------------------|-------------------------|
|         |                                     |            |                                                   | Chhattisgarh,<br>Jharkhand                   |                         |
| Krishna | Mahabaleshwer<br>(Maharashtra)      | 1400<br>km | Tungabhadra, koyna,<br>Ghatprabha, Musi,<br>Bhima | Maharashtra,<br>Karnataka,<br>Andhra Pradesh | Drains in Bay of Bengal |
| Cauvery | Brahmagiri Range<br>(Western Ghats) | 760<br>km  | Amravati, Bhavni,<br>Hemwati, Kabin               | Tamilnadu,<br>Kerala,<br>Karnataka           | Drains in Bay of Bengal |

- **Major River Systems of India**



### **1 Mark Questions:**

1. What is meant by Water Divide?
2. Which river is also known as "Dakshin Ganga"?
3. Which river drains in Arabian Sea and form Estuary?
4. Which river form Dhuandhar waterfall?
5. Name the largest sweet water lake of India. Where is it situated?
6. Which salt water lake is situated in Rajasthan?
7. What is Lagoon?
8. Name two peninsular rivers of India which drains in Bay of Bengal?
9. Which river is called as "Sorrow of Bihar"?
10. Name two rivers of India which originates from Himalaya Mountain?

### **3/5 Mark Questions:**

1. Differentiate between Himalayan and Peninsular rivers?
2. Explain Indus River System.
3. List the characteristics of Ganga River System.
4. Why Brahmaputra River does not contain silt while passing long distance in Tibet?
5. Why lakes are important for human?
6. List the economic importance of rivers?
7. Explain the causes of river pollution?
8. What are Estuaries?
9. How tributaries are different from Distributaries?
10. Explain the drainage pattern of rivers with suitable example.

### **Answers**

#### **1Mark Questions :**

1. Any elevated area like mountain or an upland which separates two drainage basins is called Water Divide.
2. Godavari River
3. Narmada River and Tapi river
4. Narmada River
5. Wular lake, in Jammu & Kashmir
6. Sambhar Lake
7. Salt water Lake which is separated from sea due to the barrier of sandbar.
8. Krishna River, Cauvery River

9. Kosi River

10. Ganga River, Indus River

**3/5 Mark Questions:**

1. See the content.(point no. 15)
2. (a) It originates from Mansarovar Lake in Tibet.  
(b) It flows westward to enter India in Ladhak.  
(c)Its tributary rivers are Zasker, Shyok, Sautlaj, vyas, Ravi, Jhelum etc.  
(d)Total length of this river is approx 2900 km of which only a third is in India while rest is in Pakistan.  
(e)It drains into Arabian Sea.
3. (a) Ganga is one of the most sacred and longest flowing river of India.  
(b) it originates from Gangotri Glacier in Himalaya.  
(c) The headwater of Ganga, called Bhagirathi, is joined by Alaknanda River at Devaprayag in Uttarakhand.  
(d)At Haridwar the Ganga emerges from the mountains on to the plains.  
(e) Yamuna, Ghagara, Kosi, Chambal, Betwa, Son etc are some of the tributaries of it.  
(f)It has a gentle slope of around 1 m for every 6 km.  
(g) Its total length is around 2500 km.  
(h) It drains in Bay of Bengal before which it forms world's largest delta "Sundarban" with Brahmaputra River.
- 4.(i) Brahmaputra River originates in Mansarovar Lake and mostly flows in Tibet parallel to Himalaya  
(ii) Tibet is cold and dry region.  
(iii) Due to low quantity of water its erosion power is less, hence it has less silt even though it flows a longer distance.
5. See the content (point no. 27)
6. (i) one of the most important inland route for trade since ancient times.  
(ii) A great source of irrigation which helps in the development of agriculture.  
(iii) The alluvial soil along its bank is the most fertile soil to grow various commodities.  
(iv) Due to the surplus production that it gave enables the other economic activities like setting up of manufacturing Industries and other related activities.

(v) Now a days it also acts as a major source of energy (i.e. hydroelectricity) which is the backbone of other economic activities.

7. (i) Demand in domestic as well as industrial use affected its quality.

(ii) Dumping of untreated Sewage Water from home and industries.

(iii) Excessive use of chemical fertilizers also pollutes the river bodies.

(iv) Industrial pollution combined with acid rain also pollutes river.

(v) Excessive deforestation led to reduction in rainfall which ultimately affects the water level in pollutes the river.

8.(i) The part of river where it joins the sea and where fresh water of river and saline water of sea is mixed is called Estuary.

(ii) It is formed when river drains into ocean or sea where steep slope is present.

(iii) Due to the steep slope no depositional work by river takes place hence no delta is formed.

3.

| <b>Tributaries</b>                                                                           | <b>Distributaries</b>                                                                       |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| The small river which joins a large river is called the <b>tributary</b> of the large river. | In its lower course river water is divided into many channels forming <b>distributaries</b> |
| It increases the water level of main river.                                                  | It reduces the water level of main river.                                                   |
| Yamuna, Kosi, Gandak etc. are the tributaries of Ganga River.                                | Bhagirathi- Hooghly is the distributary of Ganga river.                                     |

4. (i) **Dendrite pattern** develops where the river channel follows the slope of the terrain. The stream with its tributaries **resembles the branches of a tree**.

(ii) A river joined by its tributaries at approximately **right angle** develops a **trellis pattern**. It develops where hard and soft rocks exist parallel to each other.

(iii) A rectangular drainage pattern develops on a strongly rocky terrain.

(iv) The **radial pattern** develops when stream flow in **different directions from a central peak** or dome like structure.

For picture see the content