

Drainage

Fastrack Revision

- ▶ 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 the Amazon river in South America whereas it is of the Ganga river in India.
- ▶ The streams within a drainage basin form certain patterns, depending on the slope of land, underlying rock structure as well as the climatic conditions of the area. These are as follows:
 - ▶ The **dendritic pattern** develops where the river channel follows the slope of the terrain.
 - ▶ A river joined by its tributaries, at approximately right angles, develops a **trellis pattern**.

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A river along with its tributaries may be called a river system.

- ▶ A **rectangular drainage pattern** develops on a strongly jointed rocky terrain.
- ▶ The **radial pattern** develops when streams flow in different directions from a central peak or dome like structure.
- ▶ Any elevated area such as a mountain or an upland separates two drainage basins which is called as a water divide.
- ▶ The drainage system is mainly controlled by the broad relief features of a country and formed by the rivers that flow in it. The drainage system of India can be understood in context of the Himalayan rivers, Peninsular rivers and the various lakes.
- ▶ Most of the **Himalayan rivers** are perennial. These rivers receive water from rainfall as well as from melted snow from the lofty mountains. The Himalayan rivers have long courses from their source to the sea. The major Himalayan rivers are the Indus, the Brahmaputra and the Ganga which originate from the North of the mountains. These river systems are discussed below:
 - ▶ The river Indus lies in Tibet, near Lake Mansarovar. Flowing West, it enters India in the Ladakh. It forms a picturesque gorge in this part. Several tributaries, the Zaskar, the Nubra, the Shyok and the Hunza join it in the Kashmir region. The Indus is one of the longest rivers in the world having a total length of 2900 km.
 - ▶ The headwaters of the **Ganga**, called the '*Bhagirathi*' are fed by the Gangotri Glacier and joined by the Alaknanda at Devprayag in Uttarakhand. At Haridwar, the Ganga emerges from the mountains on to the plains. The tributaries of Ganga from the Himalayas are the Yamuna, the Ghaghara, the Gandak, the Kosi, etc.

- ▶ The **Brahmaputra** rises in Tibet, East of the Mansarovar lake very close to the sources of the Indus and the Sutlej. It is slightly longer than the Indus. In India, it passes through a region of high rainfall and carries a large volume of water. During rainy season, it causes widespread devastation due to floods in Assam and Bangladesh.

- ▶ A large number of the **Peninsular rivers** are seasonal. During the dry season, these rivers have reduced flow of water in their channels. These rivers have shorter and shallower courses as compared to their Himalayan counterparts. Some of the major rivers of the Peninsula are the Narmada, the Mahanadi, the Godavari, the Krishna and the Kaveri. These river systems are discussed below:

- ▶ The **Narmada** rises in Amarkantak hills in Madhya Pradesh. It flows towards the West in a rift valley formed due to faulting. The Narmada basin covers parts of Madhya Pradesh and Gujarat.
- ▶ The **Tapi** rises in the Satpura ranges, in the Betul district of Madhya Pradesh. Its basin covers parts of Madhya Pradesh, Gujarat and Maharashtra.
- ▶ The **Godavari** is the largest peninsular river. It rises from the slopes of the Western Ghats in the Nashik district of Maharashtra. Its length is about 1,500 km. It drains into the Bay of Bengal. Its drainage basin is the largest among the peninsular rivers.

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Because of its length and the area covered, the Godavari is also known as the '*Dakshin Ganga*'.

- ▶ The **Mahanadi** rises in the highlands of Chhattisgarh. It flows through Odisha to reach the Bay of Bengal. Its length is about 860 km.
- ▶ The **Krishna** river rises from a spring near Mahabaleshwar. It flows for about 1,400 km and reaches the Bay of Bengal.
- ▶ The **Kaveri** rises in Brahmagiri range of the Western Ghats and it reaches the Bay of Bengal in South of Cuddalore, in Tamil Nadu. Its total length is about 760 km.
- ▶ India has many lakes. Some of the 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.
- ▶ The Dal lake, Bhimtal, Nainital, Loktak and Barapani are some important freshwater lakes.



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Lakes are used for irrigation, navigation and electric power generation.

of great value to human beings as will be clear from the following points:

- ▶ They help to regulate the flow of a river.
- ▶ During heavy rainfall, they prevent flooding and maintain even flow of water during the dry season.
- ▶ They moderate the climate of the surroundings, maintain the aquatic ecosystem and enhance natural beauty.
- ▶ They help to develop tourism and provide recreation.



Practice Exercise



Multiple Choice Questions

- Q 1. The river system of an area is referred to as:**
- drainage
 - delta
 - water flow
 - river bed
- Q 2. When an area is being drained by a single river system, it is called:**
- River system
 - Drainage system
 - Drainage basin
 - River flow
- Q 3. Which of the following is the largest drainage basin of the world?**
- Ganga basin
 - Brahmaputra basin
 - Nile basin
 - Amazon basin
- Q 4. The pattern develops where the river channel follows the slope of the terrain.**
- Dendritic
 - Trellis
 - Radial
 - All of these

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The dendritic pattern is named so because the stream with its tributaries resembles the branches of a tree.

- Q 5. Which of the following is the largest basin in India?**
- Brahmaputra basin
 - Ganga basin
 - Indus basin
 - Godavari basin
- Q 6. Which river is called the Dihang when it enters India in Arunachal Pradesh?**
- The Ganga
 - The Brahmaputra
 - The Indus
 - The Kaveri
- Q 7. At which place, the Ganga emerges from the mountains on to the plains?**
- Dehradun
 - Alaknanda
 - Haridwar
 - Nainital
- Q 8. Which of the following is not a tributary of Ganga from the Himalayas?**
- Yamuna
 - Gandak
 - Kosi
 - Godavari

- ▶ The rivers and lakes of India suffer from the following problems:
- ▶ The growing domestic, municipal, industrial and agricultural demand for water from rivers and lakes naturally affects the quality of water. As a result, more and more water is drained out of the rivers and lakes reducing their volume.
 - ▶ Due to industrialisation and urbanisation, pollution level is rising in these water bodies. A heavy load of untreated sewage and industrial effluents are emptied into the rivers and lakes.

Q 9. The river which joins Chenab in Pakistan:

- Sutlej
- Chenab
- Jhelum
- Beas

Q 10. Which one of the following rivers is known as the 'Dakshin Ganga'?

- The Narmada
- The Godavari
- The Krishna
- The Tapi

Q 11. Which place is located on the water divide between the Indus and the Ganga river system?

- Ambala
- Allahabad (Now Prayagraj)
- Haridwar
- None of the above

Q 12. Which among the following tributaries of Ganga came from the peninsular uplands?

- Kosi
- Gandak
- Betwa
- Yamuna

Q 13. Which river rises in Tibet, near Mansarovar lake?

- Ganga
- Brahmaputra
- Kaveri
- Beas

Q 14. Which is a tributary of Brahmaputra river?

- Kosi
- Lohit
- Koyana
- Musi

Q 15. Which of the following is the largest tributary of the Ganga?

- Godavari
- Krishna
- Son
- Yamuna

Q 16. The main water divide in Peninsular India is formed by the which runs from North to South.

- Eastern Ghats
- Western Ghats
- Eastern Coast
- Konkan Plain

Q 17. Which of the following cities is located at the confluence of Ganga and Yamuna?

- Delhi
- Kanpur
- Haridwar
- Allahabad (Now Prayagraj)



... rivers like the Mahanadi, the Godavari, Krishna and Kaveri flow in which of the following directions?

- a. Eastwards b. Westwards
c. Southwards d. Northwards

Q 19. Which of the following rivers flows in West direction and make estuaries?

- a. Tapi b. Ganga
c. Son d. Krishna

Q 20. Which one of the following rivers rises in the highlands of Chhattisgarh?

- a. Mahanadi b. Krishna
c. Tapi d. Damodar

Q 21. Which river rises in the Amarkantak hills in Madhya Pradesh?

- a. Tapi b. Krishna
c. Kaveri d. Narmada

Q 22. Which of the following rivers has no tributaries?

- a. Narmada b. Mahanadi
c. Yamuna d. Chenab

Q 23. Which of the two states does river Kaveri pass through?

- a. Telangana and Karnataka
b. Andhra Pradesh and Kerala
c. Karnataka and Tamil Nadu
d. Andhra Pradesh and Telangana

Q 24. Which of the following rivers is known as the 'sorrow' of West Bengal?

- a. Damodar b. Indus
c. Tapi d. Narmada

Q 25. Which one of the following freshwater lakes is the largest?

- a. Wular b. Dal
c. Nainital d. Barapani

Q 26. A meandering river across a flood plain forms..... later develop into

- a. cut-offs, ox-bow b. ox-bow, cut-offs
c. horse-shoe, ox-bow d. None of these

Q 27. The Wular Lake in Jammu and Kashmir is the result of which of the following activities?

- a. Tectonic activity b. Rainfall
c. Human activity d. None of these

Q 28. Which of the following lakes is formed as a result of tectonic activity?

- a. Wular lake b. Kolleru lake
c. Loktak lake d. Sambhar lake

Q 29. The Dal lake, Bhimtal, Nainital, Loktak and Barapani are examples of which type of lakes?

- a. Natural salt water lakes
b. Natural freshwater lakes
c. Man-made freshwater lakes
d. None of the above

Q 30. Dal lake is located at which of the following places in India?

- a. Jammu b. Kashmir
c. Ladakh d. Baramulla

Q 31. In which of the following states is Sambhar Lake situated?

- a. Rajasthan b. Uttarakhand
c. Assam d. Jammu and Kashmir

Q 32. Which of the following lakes in Rajasthan is a salt water lake?

- a. Dhebar lake b. Kaylana lake
c. Sambhar lake d. Ana Sagar lake

Q 33. Identify the river with its given characteristic features:

(i) It rises in the Satpura ranges in the Betul district of Madhya Pradesh.

(ii) Its length is about 724 km.

(iii) It covers part of Madhya Pradesh, Gujarat and Maharashtra.

- a. Narmada river b. Tapi river
c. Godavari river d. Mahanadi river

Q 34. Match the following:

River	Origin/Rise
1. Narmada river	A. Amarkantak hills of Madhya Pradesh
2. Mahanadi river	B. Western Ghats near Mahabaleshwar
3. Krishna river	C. Brahmagiri range of the Western Ghats
4. Kaveri river	D. Highlands of Chhattisgarh

- | | | | |
|------|---|---|---|
| 1 | 2 | 3 | 4 |
| a. A | B | C | D |
| b. C | B | D | A |
| c. A | D | B | C |
| d. A | C | B | D |

Q 35. Read the following statements carefully and choose the correct option:

Statement (I): 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.

Statement (II): The river Yamuna rises from the Gangotri Glacier in the Himalayas. It flows parallel to the Ganga and as a right bank tributary, meets the Ganga at Allahabad.

- a. Statement (I) is correct and (II) is incorrect.
b. Statement (I) is incorrect and (II) is correct.
c. Both statements are incorrect.
d. Both statements are correct.

the following statements carefully and the correct option:

Statement (I): Apart from originating from the major physiographic regions of India, the Indus, Godavari and the Peninsular Rivers are different from each other in many ways.

Statement (II): The drainage systems of India are mainly controlled by the broad relief features of the shallower courses as compared to their Himalayan counterparts.

- Statement (I) is correct and (II) is incorrect.
- Statement (I) is incorrect and (II) is correct.
- Both statements are incorrect.
- Both statements are correct.

Assertion & Reason Type Questions

Directions (Q Nos. 37-42): In the following questions given below, there are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the correct option:

- Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- Assertion (A) is true, but Reason (R) is false.
- Assertion (A) is false, but Reason (R) is true.

Q 37. Assertion (A): Most of the Himalayan rivers are perennial.

Reason (R): These rivers receive water from rain as well as from melted snow from the high mountains and have water throughout the year.

Q 38. Assertion (A): The flow of peninsular rivers is dependent on rainfall.

Reason (R): These rivers have longer courses as compared to the Himalayan rivers.

Q 39. Assertion (A): In Assam, the Brahmaputra river carries a large amount of water and large amount of silt.

Reason (R): Assam is a high rainfall area.

Q 40. Assertion (A): Rivers are important for the country's economy.

Reason (R): Rivers provide water which is necessary for the survival of man and for irrigation.

Q 41. Assertion (A): Water pollution in rivers causes a significant danger to human health.

Reason (R): Human beings depend on rivers for many daily activities and necessities such as drinking water.

Q 42. Assertion (A): The Godavari river is also known as the *Dakshin Ganga*.

Reason (R): The length of Godavari river is about 1,500 km and it covers a large area of Maharashtra, Madhya Pradesh, Odisha and Andhra Pradesh.

Answers

- (a) 2. (c) 3. (d) 4. (a) 5. (b)
- (b) 7. (c) 8. (d) 9. (c) 10. (b)
- (a) 12. (c) 13. (b) 14. (b) 15. (d)
- (b) 17. (d) 18. (a) 19. (a) 20. (a)
- (d) 22. (a) 23. (c) 24. (a) 25. (a)
- (a) 27. (a) 28. (a) 29. (b) 30. (b)
- (a) 32. (c) 33. (b) 34. (c) 35. (a)
- (d) 37. (a) 38. (c) 39. (a) 40. (a)
- (a) 42. (a)

Source Based Questions

Source 1

Read the source given below and answer the questions that follow by choosing the most appropriate option:

The Brahmaputra rises in Tibet East of Mansarovar lake very close to the sources of the Indus and the Sutlej. It is slightly longer than the Indus, and most of its course lies outside India. It flows Eastwards parallel to the Himalayas. On reaching the Namcha Barwa (7,757 m), 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, and many other tributaries to form the Brahmaputra in Assam.

In Tibet, the river carries a smaller volume of water and less silt as it is a cold and a dry area. In India, it passes through a region of high rainfall. Here, the river carries a large volume of water and considerable amount of silt. The Brahmaputra has a braided channel in its entire length in Assam and forms many riverine islands.

Q 1. In which state of India does river Brahmaputra have a braided channel in its entire length?

- Assam
- Arunachal Pradesh
- West Bengal
- Both a. and b.

Q 2. Where do Brahmaputra river takes a 'U' turn?

- Mansarovar lake
- Namcha Barwa
- Farakka
- Ambala

Q 3. Through which of the following Brahmaputra river enters India in Arunachal Pradesh?

- Gorge
- Meander
- Pass
- Delta

Q 4. From which of the following regions, the river Brahmaputra rises?

- a. Tibet West of Mansarovar lake
- b. Tibet East of Mansarovar lake
- c. Slopes of the Western Ghats
- d. Slopes of the Eastern Ghats

Q 5. Why does Brahmaputra river carry a larger volume of water and silt in India compared to Tibet?

- a. It flows through a deep gorge.
- b. It passes through a region of high rainfall.
- c. It is formed with alluvial deposits.
- d. It has a dendritic drainage pattern.

Q 6. There are two statements marked as Assertion (A) and Reason (R). Read them and choose the correct option:

Assertion (A): In India, the Brahmaputra river turns into mature and old stage.

Reason (R): It gets overloaded with silt and sediments.

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- c. Assertion (A) is true, but Reason (R) is false.
- d. Assertion (A) is false, but Reason (R) is true.

Answers

1. (d) 2. (b) 3. (a) 4. (b) 5. (b) 6. (b)

Source 2

Read the source given below and answer the questions that follow:

Apart from originating from the two major physiographic regions of India, the Himalayan and the Peninsular rivers are different from each other in many ways. 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. The two major Himalayan rivers, the Indus and the Brahmaputra originate from the North of the mountain ranges. They have cut through the mountains making gorges. The Himalayan rivers have long courses from their source to the sea.

They perform intensive erosional activity in their upper courses and carry huge loads of silt and sand. In the middle and the lower courses, these rivers form meanders, ox-bow lakes, and many other depositional features in their floodplains. They also have well-developed deltas.

Q 1. Mention any two features of the Himalayan rivers.

- Ans.** The two features of the Himalayan rivers are:
- (i) They have long courses from their source to the sea.
 - (ii) These rivers perform both erosional as well as depositional activities.

Q 2. Why are most of the Himalayan rivers perennial?

- Ans.** Most of the Himalayan rivers are perennial because they have water throughout the year. They receive water from rain as well as from melted snow from the lofty mountains.

Q 3. How do the Himalayan rivers form depositional features?

- Ans.** When Himalayan rivers reach the plains, the slope of the land is much less, slowing down the river and making them deposit much of the silt they have accumulated. So, the Himalayan rivers form depositional features in their lower courses.



Very Short Answer Type Questions

Q 1. What do you understand by the term 'drainage basin'?

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

Q 2. What are perennial rivers?

- Ans.** Perennial rivers are those rivers which have water throughout the year.

Q 3. Name three major rivers of the Indian subcontinent which originate beyond the Himalayas.

- Ans.** The three major rivers of the Indian subcontinent that originate beyond Himalayas are the Indus, Sutlej and the Brahmaputra.

Q 4. State the total length of the Ganga river.

- Ans.** The total length of the Ganga river is 2,500 km.

Q 5. Which of the rivers— Beas, Ghaghara, Indus and Yamuna rises from a glacier in Uttarakhand?

- Ans.** The Yamuna rises from the Yamunotri glacier in Uttarakhand.

Q 6. Which pattern develops when streams flow in different directions from a central peak?

- Ans.** The radial pattern develops when streams flow in different directions from a central peak.

Q 7. Name any two tributaries of the Brahmaputra river.

- Ans.** The Dibang and Lohit are the two tributaries of the Brahmaputra river.

Q 8. What is the Sundarban famous for?

- Ans.** Sundarban is famous for being the home of the Royal Bengal Tiger.

the picture and answer the question that



What does the above picture depict?

Ans. The above picture depicts the meeting point of Bhagirathi and Alaknanda at Devprayag.

Q 10. Which is the Northernmost point of the Ganga Delta?

Ans. Farakka in West Bengal is the Northernmost point of the Ganga Delta.

Q 11. When does the Ganga is called the Meghna?

Ans. When the Ganga flows Southwards into Bangladesh and is joined by the Brahmaputra, it is known as the Meghna.

Q 12. State any one important feature of the river Brahmaputra.

Ans. The Brahmaputra has a braided channel in its entire length in Assam and forms many riverine islands.

Q 13. Name five rivers rising in the Western Ghats.

Ans. Godavari, Krishna, Kaveri, Tungabhadra, Ghatprabha are the five rivers rising in Western Ghats.

Q 14. Which river is known as 'Dakshin Ganga'?

Ans. The Godavari, because of its length and the area it covers, is known as 'Dakshin Ganga'.

Q 15. In which hills does the Narmada rise?

Ans. The Narmada rises in the Amarkantak hills in Madhya Pradesh.

Q 16. In which hills does the Tapi river rise?

Ans. The Tapi river rises in the Satpura hills near Betul in Madhya Pradesh.

Q 17. Why are the Peninsular rivers seasonal?

Ans. Peninsular rivers do not originate from snow covered mountains, so they dry up in summer.

Q 18. Where are the most of the freshwater lakes located?

Ans. Most of the freshwater lakes are located in the Himalayan region.

Q 19. Name a salt water lake.

Ans. Sambhar lake in Rajasthan is a salt water lake.

Q 20. Where can we find marble rocks?

Ans. Marble rocks are found in Jabalpur.



Short Answer Type Questions ↘

Q 1. Explain any three drainage patterns formed by the stream.

Ans. The three drainage patterns which could be formed are as follows:

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

(ii) **Radial:** A radial pattern develops when streams flow in different directions from a central peak or dome-like structure.

(iii) **Rectangular:** A rectangular drainage pattern develops on a strongly joined rocky terrain.

Q 2. State three features of peninsular rivers.

Ans. The following are the features of peninsular rivers:

(i) A large number of the peninsular rivers are seasonal.

(ii) These rivers have shorter and shallower courses as compared to their Himalayan counterparts.

(iii) Some of them originate in the Central Highlands and flow towards the West (Narmada and Tapi).

(iv) Most peninsular rivers originate in the Western Ghats and flow towards the Bay of Bengal.

Q 3. The peninsular rivers are not navigable. Give reasons.

Ans. Peninsular rivers are not navigable because of the following reasons:

(i) A large number of the peninsular rivers are seasonal. The flow of peninsular rivers is dependent upon rainfall and they generally dry up in the summer.

(ii) River beds are uneven, rocky and have sharp slopes.

(iii) Construction of dams on these rivers has also made navigation difficult.

Q 4. The Peninsular rivers draining into the Bay of Bengal? Justify your answer with two reasons.

Ans. Most of the Peninsular rivers drain into the Bay of Bengal because of the following reasons:

(i) The Eastern Ghats are lower than the Western Ghats. These are discontinuous, allowing the rivers easy passage to the Bay of Bengal.

(ii) The Deccan plateau has a gentle slope towards the East, which gives easier passage in that direction.

Q 5. How was Sundarban Delta formed?

Ans. The Ganga mainstream flows Southwards into Bangladesh and is joined by the Brahmaputra, thus resulting in the formation of a delta. The delta formed by these rivers is known as the Sundarban Delta. The Sundarban Delta derived its name from the Sundari tree which grows well in marshlands. It is the world's largest and fastest growing delta.

Which two major rivers form the largest delta. Mention any four features of this delta.

Ganga and the Brahmaputra are the two major rivers that form the largest delta called the Sundarban delta.

The four features of this delta are:

- (i) It is formed with alluvial deposits which make it very fertile.
- (ii) A major part of this delta lies in Bangladesh.
- (iii) This region is densely covered by mangrove forests and is the home for Royal Bengal Tiger.
- (iv) The Sundarban is UNESCO world heritage site and is the world's largest delta.

Q 7. Briefly describe the Narmada basin.

Ans. The Narmada rises in Amarkantak hills in Madhya Pradesh. It flows towards the West in a rift valley formed due to faulting. In Jabalpur, it passes through 'marble rocks' where it flows through a deep gorge, and also plunges over steep rocks as the 'Dhuandhar Falls'. All the tributaries of the Narmada are very short and most of these join the mainstream at right angles. The Narmada basin covers part of Madhya Pradesh and Gujarat.

COMMON ERROR

Students do not mention all the features of Narmada basin in note form such as areas covered.

Q 8. What are the features of the Tapi basin?

Ans. Features of the Tapi basin are as follows:

- (i) The Tapi rises in the Satpura ranges in the Betul district of Madhya Pradesh.
- (ii) It flows in a rift valley parallel to the Narmada but it is much shorter in length.
- (iii) Its basin covers parts of Madhya Pradesh, Gujarat and Maharashtra.
- (iv) The main West-flowing rivers of this basin are the Sabarmati, the Mahi, the Bharathpuzha and the Periyar.

Q 9. Write a note on Godavari basin.

Ans. The Godavari river rises from the slope of Western Ghats in Nashik. Its length is approximately 1,500 km. Due to its length, it is called 'Dakshin Ganga'. Its drainage basin is the largest among the peninsular rivers. Its tributaries are the Purna, the Wardha, the Pranhita, the Manjra, the Wainganga and the Penganga.

Q 10. Mention any three important features of the Mahanadi basin.

Ans. The three important features of the Mahanadi basin are:

- (i) The Mahanadi basin covers parts of the states of Chhattisgarh, Jharkhand, Odisha and Maharashtra.
- (ii) It rises in the highlands of Chhattisgarh and flows through Odisha to reach the Bay of Bengal.
- (iii) The length of the river is about 860 km. The Hirakud dam has been built on it forming the Hirakud reservoir due to the devastating floods by it in the previous years.

Q 11. Write short note on the Krishna basin.

Ans. The Krishna river originates from a spring near Mahabaleshwar and flows for about 1,400 km and reaches the Bay of Bengal. Some of its tributaries are Tungabhadra, the Koyana, the Ghatprabha, the Musi and the Bhlma. Its drainage basin is shared by Maharashtra, Karnataka and Andhra Pradesh.

Q 12. Give differences between natural lake and artificial lake.

Ans. Difference between natural lake and artificial lake are:

S.No.	Basis of Difference	Natural Lake	Artificial Lake
(i)	Formation	It is formed due to <u>action of wind, glaciers, etc.</u>	It is a <u>lake made by man.</u>
(ii)	Process	It is a <u>low-lying part of Earth's surface in which the rainwater collects.</u>	Man-made or artificial water bodies are <u>made by deliberately collecting water in shallow areas.</u>
(iii)	Size	These lakes are <u>deeper.</u>	These lakes are <u>smaller and shallow.</u>



TIP

Give the differences on various bases in tabular format.

Q 13. Write some salient features of salt lakes.

- Ans.** Salient features of salt lakes are as follows:
- (i) The salt lakes have salty water.
 - (ii) They are generally found in arid and semi-arid parts.
 - (iii) They are fed by short and intermittent streams.
 - (iv) During dry season, they get dried up.

Q 14. What are the major reasons for the reduction in volume of water in most of the rivers?

Major reasons for the reduction in volume of water in most of the rivers are:

(i) There has been an increase in demand of river water for domestic needs due to increase in population.

(ii) There is a decline in rainfall which feeds the rivers due to change in climate.

(iii) The growing demand of industry and agriculture for water is fulfilled from the river which reduces the volume of water in rivers.

Long Answer Type Questions

Q 1. State the various features of the Himalayan rivers.

Ans. The following are the features of Himalayan rivers:

- (i) Most of the Himalayan rivers are perennial.
- (ii) The major Himalayan rivers originate from the North of the mountains.
- (iii) The Himalayan rivers have long courses from their source to the sea.
- (iv) They perform intensive erosional activity in their upper courses and carry huge loads of silt and sand.
- (v) In the middle and the lower courses, these rivers form meanders, ox-bow lakes and many other depositional features in their floodplains.
- (vi) They also have well-developed deltas.

Q 2. Explain the features of the Ganga river basin.

Ans. The following are the features of the Ganga river basin:

- (i) The Ganga has two headstreams, viz., the Alaknanda and the Bhagirathi. They join together at Devprayag.
- (ii) From the Himalayas, the Ganga enters the plains at Haridwar. It is joined together by a large number of tributaries like the Ghaghara, the Gandak and the Kosi.
- (iii) The Yamuna and the Son are the two main right bank tributaries of the Ganga.
- (iv) The Ganga enters Bangladesh as the river Padma. It flows Southwards through Bangladesh and is joined by the Brahmaputra, thereby known as the Jamuna. After joining with Meghna, it is known as the Meghna.
- (v) The length of the Ganga is over 2,500 km, and it has the largest basin.

Q 3. Mention some important features of the Brahmaputra River system.

Ans. Some important features of the Brahmaputra river system are:

- (i) The Brahmaputra rises in Tibet, East of the Mansarovar lake. It is slightly longer than the Indus and most of its course lies outside India.

(ii) It has a braided channel in its entire length in Assam and forms many riverine islands.

(iii) Every year during the rainy season, the river overflows its banks, causing widespread devastation in Assam and Bangladesh.

(iv) This river is marked by huge deposits of silt on its river bed causing a tremendous rise in the water level.

(v) This river also shifts its channel frequently.

Q 4. Which two peninsular rivers flow Westwards? Mention two similarities and two differences between the two rivers.

Ans. The Narmada and the Tapi rivers flow Westwards. The following are the similarities between these two rivers:

- (i) These rivers flow through a rift valley.
- (ii) The tributaries of these rivers are small in size.

The following are the differences between these two rivers:

- (i) The Tapi is the second largest river of the Peninsular Indian and the Narmada is the fifth largest river.
- (ii) The Narmada river forms an estuary before entering into the Gulf of Khambhat. On the other hand, the Tapi does not form an estuary.

Q 5. Describe the importance of lakes to human beings.

Ans. Lakes are very important to human beings. The following points make this clear:

- (i) They help to regulate the flow of a river.
- (ii) During heavy rainfall, they prevent flooding and during the dry season they help maintain an even flow of water.
- (iii) Lakes are also used to developing hydel power.
- (iv) They moderate the climate of the surrounding area.
- (v) They provide recreation through boating and swimming.

Q 6. Why are rivers important for the country's economy?

Ans. The rivers are important for the country's economy because of the following reasons:

- (i) Besides water, the rivers carry sediments and minerals which are very useful for us.
- (ii) They make the soil fertile which can be used for cultivation.
- (iii) Rivers sustain all types of human activities like hunting, gathering, pastoral and farming activities.
- (iv) Their water is extensively used in irrigation and in developing hydroelectricity.
- (v) They are used as a means of transportation which can carry men and material from one place to another.

ention any five main features of the Ganga Action Plan.

The main features of the Ganga Action Plan are:

- (i) Sewage flowing into the river is to be diverted to other locations for treatment and conversion into energy source.
- (ii) The diversion of several major drains carrying wastes into the river has been completed in cities like Varanasi, Patna and Kanpur and the pollution level too has been decreased.
- (iii) An infrastructure capable of diverting and treating 835 million litres per day of domestic waste or sewage has been created.
- (iv) The Ganga Action Plan has been merged with the National River Conservation Plan.
- (v) It now covers 152 towns located along 27 interstates in over 16 states.

Q 8 Explain the 'National River Conservation Plan' (NRCP) in brief.

Ans. In 1985, the activities of Ganga Action Plan (GAP) Phase-I were initiated which were declared closed on 31st March, 2000. The Steering Committee of the National River Conservation Authority reviewed the progress of the GAP and undertook necessary corrections on the basis of lessons learnt and experiences gained from GAP Phase-I. These have been applied to the major polluted rivers of the country under the NRCP.

The Ganga Action Plan Phase-II has been merged with the NRCP. The expanded NRCP now covers 152 towns located along 27 interstate rivers in 16 states. Under this action plan, pollution abatement works are being taken up in 57 towns. A total of 215 schemes of pollution abatements have been sanctioned. So far, 69 schemes have been completed under this action plan. A million litres of sewage is targeted to be intercepted, diverted and treated.



Chapter Test

Multiple Choice Questions

- Q 1. Which river is called the Dihang when it enters India in Arunachal Pradesh?**
- a. The Ganga
 - b. The Brahmaputra
 - c. The Indus
 - d. The Kaveri
- Q 2. Which one of the following rivers rises from the slopes of the Western Ghats in the Nasik district of Maharashtra?**
- | | |
|-------------|------------|
| a. Mahanadi | b. Narmada |
| c. Godavari | d. Koyna |
- Q 3. The city located on the water divide between the Indus and the Ganga river system is:**
- a. Jabalpur
 - b. Ambala
 - c. Meerut
 - d. Chandigarh
- Q 4. Which one of the following is not a tributary of the river Ganga?**
- | | |
|-------------|-----------|
| a. Yamuna | b. Sutlej |
| c. Ghaghara | d. Kosi |
- Q 5. Which of the following types of lakes is formed due to river action?**
- a. Salt water lakes
 - b. Glacial lakes
 - c. Ox-bow lakes
 - d. Lagoons

Assertion and Reason Type Questions

Directions (Q Nos. 6-7): In the following questions given below, there are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the correct option:

- a. Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- b. Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- c. Assertion (A) is true, but Reason (R) is false.
- d. Assertion (A) is false, but Reason (R) is true.

Q 6. Assertion (A): River banks have attracted settlers from ancient times.

Reason (R): Rivers provide water for irrigation and facilities for inland navigation.

Q 7. Assertion (A): In Trellis pattern, straight tributaries meet straight trunk streams with bends at almost right angles.

Reason (R): They are formed on the sedimentary rocks of different resistance to erosion.

Source Based Question

Q 8. Read the source given below and answer the questions that follow by choosing the most appropriate option:

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 1,500 km. It drains into the Bay of Bengal. Its drainage basin is also the largest among the



ular rivers. The basin covers parts of Maharashtra (about 50 per cent of the basin area Maharashtra), Madhya Pradesh, Odisha 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. The last three tributaries are very large. Because of its length and the area it covers, it is also known as the *Dakshin Ganga*.

- (i) **What is the length of Godavari river?**
a. 1,400 km b. 1,500 km
c. 1,600 km d. 1,700 km
- (ii) **Which of the following tributaries join Godavari?**
a. Purna b. Wardha
c. Pranhita d. All of these
- (iii) **Which is the largest river of the Peninsular India?**
a. Godavari b. Krishna
c. Kaveri d. Tapi
- (iv) **From which place the river Godavari rises?**
a. Amarkantak hills
b. Eastern Ghats
c. Western Ghats
d. Satpura ranges
- (v) **Through which of the following states the river Godavari flows?**
a. Maharashtra
b. Madhya Pradesh
c. Odisha
d. All of the above

- (vi) **Why is Godavari river also known as *Dakshin Ganga*?**
a. It is the longest river.
b. It covers the largest area.
c. It makes the biggest waterfall.
d. Both a. and b.

Very Short Answer Type Questions

- Q 9. Name the two picturesque locations created by the Narmada basin.
- Q 10. From where does the river Ganga originate? Name the tributaries of the Ganga river.

Short Answer Type Questions

- Q 11. Discuss the significant differences between the Himalayan and the Peninsular rivers.
- Q 12. How do the Himalayan rivers perform erosional activities and form depositional features?
- Q 13. Define the term drainage. What are the different types of drainage patterns?

Long Answer Type Questions

- Q 14. Give five characteristics of the Ganga-Brahmaputra delta.
- Q 15. Discuss about the uses of salt water lakes in India with reference to Sambhar and Chilika lakes.