

Short Answer (SA) Type Questions

[3 Marks each]

- 1 How do the Himalayan rivers perform erosional activities and form depositional features?

Ans. As the Himalayan rivers are perennial and have long courses, the regular flow of water in them performs intensive erosional activities in the upper part, which has a steep slope. They accumulate a lot of silt and sand. When they 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. Thus, the Himalayan rivers form depositional features like meanders, ox-bow lakes, riverine islands and deltas in their lower courses.

- 2 Describe any three features of the Himalayan rivers.

or

Explain the main features of rivers originating from the Himalayas.

Ans. Three features of the Himalayan rivers are

- (i) Most of them are perennial. It means that they have water throughout the year.
- (ii) The Himalayan rivers have long courses from their source to the sea. Many of them make spectacular gorges.
- (iii) They perform intensive erosional activity in their upper courses and carry huge loads of silt and sand. Apart from this, they also form numerous depositional features like flood plains, river bluffs and levees.

- 3 Explain any three features of Peninsular rivers.

Ans. Three features of Peninsular rivers are

- (i) A large number of Peninsular rivers are seasonal, as their flow depends on rainfall. Thus, during summer there is considerable reduction in their volume of water.
- (ii) These rivers have short and shallow courses. They flow in straight and linear courses due to hard rocky bed and they lack in silt and sand.
- (iii) Most of the Peninsular rivers originate in the Western Ghats and flow towards the Bay of Bengal.

- 4 Why are most of the Peninsular rivers draining into the Bay of Bengal? Give two reasons. Name two rivers draining into the Arabian Sea.

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

- (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.
- The Narmada and the Tapi are two rivers draining into the Arabian Sea.

- 5 Describe the Indus river system on the following heads:

- (i) Source
- (ii) Any two tributaries
- (iii) Indus Water Treaty.

Ans. (i) **Sources** The river Indus rises in Tibet, near Lake Mansarwar. Flowing West, it enters India in the Ladakh district of Jammu and Kashmir.

(ii) **Tributaries** Tributaries of the Indus river system are the Zaskar, the Nubra, the Shyok, the Hunza, the Sutlej, the Beas, the Ravi, the Chenab and the Jhelum.

(iii) **Indus Water Treaty** According to it, India can use only 20 % of the total water carried by the Indus river system. This water is used for irrigation in Punjab, Haryana, the Southern and the Western parts of Rajasthan.

- 6 Write a brief account on the Indus Water Treaty.

Ans. Indus Water Treaty is a water sharing treaty between India and Pakistan, signed in Karachi on 19th September, 1960. The treaty gives India exclusive use of all the waters of the Eastern rivers (Satluj, Beas and Ravi) and their tributaries before the point where the rivers enter Pakistan.

Similarly, Pakistan has exclusive use of the Western rivers (Indus, Jhelum and Chenab). India can use only 20 % of the total water carried by the Indus.

- 7 Describe the three main features of the Ganga river system.

Ans. The three main features of the Ganga river system are

- (i) The length of the Ganga is over 2525 km. It is India's longest river.
- (ii) It has many tributaries which join it from both North and South to form the Ganga river basin. It has a dendritic drainage pattern.
- (iii) The Ganga originates from the Gangotri glacier. The headwaters of the Ganga is called 'Bhagirathi'. It joins Alaknanda at Devprayag in Uttarakhand. At Haridwar, the Ganga emerges from the mountains onto the plains.

8 Which two major rivers form the largest delta? Write any four features of this delta.

Ans. The Ganga and the Brahmaputra are two major rivers that form the largest delta, called the Sunderban delta.

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 Sunderbans is UNESCO's world heritage site.

9 In which state of India does river Brahmaputra have a braided channel in its entire length? Why does this river carry a larger volume of water and silt in India compared to Tibet?

Ans. The river Brahmaputra rises in China (Tibet) East of the Mansarowar lake and flows Eastwards and enters in India by taking a 'U' turn. The river's braided channel can be seen mainly in Assam and Arunachal Pradesh forming many riverine Islands..

Reason for carrying a larger volume of water and silt in India

The reason for carrying a larger volume of water and silt in India is due to mainly that it passes through a region of high rainfall. Besides, there is reduction in its velocity in this region. In Tibet, it is at young stage from where it is originated. But in India, it turns into mature and old stage thereby reducing its velocity of water. Thus, it gets overloaded with silt and sediments.

10 Name the Peninsular river that creates many picturesque locations. Write any two features of it.

or

Where does river Narmada originate? Name any two picturesque locations formed by it.

Ans. The Peninsular river that creates many picturesque locations is the river Narmada. It rises in the Amarkantak hills in Madhya Pradesh.

Two Picturesque locations:

The 'Marble rocks' near Jabalpur where Narmada flows through a deep gorge and the 'Dhuandhar falls' where the river plunges over steep rocks are some of the notable picturesque locations.

Two features of the Narmada River

- (i) It flows towards the West in a rift valley formed due to faulting.
- (ii) The Narmada basin covers parts of Madhya Pradesh and Gujarat states.

11 Describe any three important features of the Mahanadi basin.

Ans. Three important features of the Mahanadi basin are

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

12 (a) How are most of the fresh water lakes in the Himalayan region formed? Give two examples of fresh water lakes of this region.

(b) How is Sambhar lake useful?

Ans. (a) Most of the fresh water lakes are in the Himalayan region. Most of these are the result of glacial action and some are of tectonic activity.

They were formed when glaciers dug out a basin, which was later filled with snowmelt. Examples of such lakes are Bhimtal, Nainital, Dal lake etc. India's largest fresh water lake is the Wular lake. It is the result of tectonic activity.

(b) Sambhar lake is India's largest inland salt water lake. It is located in Rajasthan. It is an important source of salt in India.

13 What are the causes of water pollution in rivers and lakes?

or

Explain any three causes of river pollution in India.

Ans. Water in rivers and lakes is being reduced as the requirements of rapid urbanisation, population growth and industrialisation cause more water to be drained out from them.

The main causes of river pollution are

- (i) Huge amounts of untreated sewage and industrial effluents are being emptied into the rivers and lakes. This has caused the water bodies to become highly polluted.
- (ii) Human ashes (due to cremation near water bodies), dead animals and leaching out of nitrogen compounds from fertilised agricultural lands also increase the pollution.
- (iii) Nutrient run-off in storm water from 'sheet flow' over an agricultural field or a forest is also another cause.

14 How do rapid urbanisation and industrialisation cause river pollution?

Ans. Rapid urbanisation and industrialisation increase the domestic, municipal and industrial demand for water from rivers. Thus, more water is being drained out of the rivers, reducing their volume. Further, 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, increasing the pollution of the river water. Thus, the pollution level of the water in the rivers has been rising.

15 **HOTS** Make a comparison in tabular form between a delta and an estuary.

Ans. Comparison between a delta and an estuary is tabulated below

Delta	Estuary
These are triangular deposits made by rivers at their mouths.	These are sharp edged mouths of rivers without any deposits.
These are formed in regions of low tides and coastal plains.	These are formed in regions of high tides and rift valleys.
These are agriculturally fertile lands.	These are not agriculturally fertile lands.

16 **HOTS** Explain what life would be like if fresh water is not available.

Ans. For survival, man depends on water. It circulates and goes through our bodies, replenishing nutrients and carrying away waste materials.

Without fresh water, no activities of human beings or life would be possible. Sea water is salty and it cannot substitute for fresh water. No trees will be able to grow and no land based animals can survive. It will be a 'dead' world.

17 **HOTS** Explain the major reasons for the reduction in volume of water in most of the rivers.

Ans. The major reasons for the reduction in volume of water in most of the rivers are as follows

- (i) Increase in demand of river water for domestic needs due to increase in population.
- (ii) Decline in rainfall which feeds the rivers due to climate change.
- (iii) The growing demand of industry and agriculture for water is taken from the river, thus reducing the volume of water in rivers.

Long Answer (LA) Type Questions

[5 Marks each]

1 Write some important features of Sunderban delta.

or

Give five characteristics of the Ganga-Brahmaputra delta.

Ans. The five characteristics of the Ganga-Brahmaputra delta are

- (i) The Ganga's mainstream flows Southwards into Bangladesh and join the river Brahmaputra. This river further down stream come to known as Meghna river.
- (ii) These rivers flow into Bay of Bengal. The delta formed by these rivers is known as the Sunderban Delta.
- (iii) It is the world's largest delta.
- (iv) It is among the most fertile regions in the world. With more than 130 million inhabitants, this belongs to the most densely populated areas in the world (1300 inhabitants/sq km).

(v) Downstream of the confluence, the river is named Padma. About halfway to the ocean, the Meghna (named as the Brahmaputra in India) joins the Padma.

2 Name four East flowing peninsular rivers of India and explain any two of them.

Ans. Four East flowing peninsular rivers of India are Mahanadi, Godavari, Krishna and Kaveri.

The Godavari River The Godavari is the largest peninsular river. It is about 1500 km long. It rises near Nasik from the slopes of the Western Ghats and forms a delta at the Bay of Bengal. Its drainage basin is the largest among the peninsular rivers. Because of its length and the area it covers, it is also known as the 'Dakshin Ganga'.

The Krishna River The Krishna river rises from a spring near Mahabaleshwar. It flows for about 1400 km to form a delta in the Bay of Bengal. The rivers Tungabhadra, Koyana, Ghatprabha, Musi and Bhima are some of its tributaries. Its drainage basin is shared by Maharashtra, Karnataka, Telangana and Andhra Pradesh.

- 3 Explain the use of salt water lakes in India with particular reference to Sambhar and Chilika lakes.

Ans. The uses of salt water lakes i.e. the Sambhar lake and the Chilika lake are as follows

The Sambhar Lake It is India's largest saline lake and has made Rajasthan the third largest salt producing state in India. It produces about 2 lakh tonnes of clean salt every year. Salt is produced by evaporation of brine. This lake is also recognised as a wetland of international importance because it is a key wintering area for flamingos and other birds that migrate from Northern Asia.

The Chilika Lake Chilika lake in Odisha is the largest brackish water lake in India. It is the wintering ground for migratory birds of the Indian sub-continent.

The lake is home to a number of threatened species of plants and animals. It is an ecosystem with large fishery resources sustaining 150000 fishermen living nearby.

- 4 What are the causes of river pollution? Suggest some ways to overcome them.

or

Suggest any three measures to control the river pollution.

Ans. The causes of river pollution are

- (i) **Untreated sewage** The discharge of untreated sewage into rivers is the single most important cause for pollution of rivers.
- (ii) **Agricultural wastes** If a large amount of fertilisers or farm waste drains into a river, the concentration of nitrate and phosphate in the water increases, considerably.
- (iii) **Industrial waste** Chemical waste products of industrial processes are sometimes discharged into rivers. These substances may enter the water in such high concentrations that fish and other animals are died immediately.
- (iv) **Oil pollution** If oil enters a slow-moving river, it forms a rainbow coloured film over the entire surface, preventing oxygen from entering the water. This causes death of many water organisms.

Ways to control water pollution are

- (i) Various 'action plans' have been started to clean rivers. e.g., the Ganga Action Plan, the Yamuna Action Plan, etc.
- (ii) Emphasis is ongoing for technologies reducing the wastage of water and promoting recycling, improvement of water quality, etc.

- (iii) Measures are being taken to divert raw sewage of effluents flowing into the river to other locations for treatment and conversion into energy sources and chemicals.

- 5 Explain the 'National River Conservation Plan' (NRCP) in brief.

Ans. The Central Government sponsored scheme of National River Conservation Plan (NRCP) is being implemented by the Central Government jointly with the State Governments on a cost-sharing basis.

The pollution abatement work under NRCP presently covers polluted stretches of 39 major rivers and 152 towns spread over 16 states in the country.

The activities of Ganga Action Plan (GAP) Phase-I initiated in 1985, were declared closed on 31st March, 2000. The steering committee of the National River Conservation Authority reviewed the progress of the GAP and necessary correction were made on the basis of lessons learnt and experience gained from GAP Phase-I.

These have been applied to the major polluted rivers of the country by the NRCP. The Ganga Action Plan (GAP) Phase-II has been merged with NRCP. A total of 215 schemes of pollution abatement have been sanctioned. So far, 69 schemes have been completed under this action plan. A million litres of sewage per day is targeted to be intercepted, diverted and treated.

- 6 Why is river water pollution considered as a significant danger? Explain.

Ans. Water pollution is of great concern to the world. Water pollution in rivers causes a significant danger to human health because human beings depend on rivers for many daily activities and necessities such as drinking water.

Further, river water pollution affects the plants and other organisms living in it. It damages their individual species besides damaging their natural biological communities. It causes havoc to the ecological balance in the system. Less than 1% of the total water on the Earth is available as fresh water in lakes and rivers. As this needs to support the entire human population; any pollution to this miniscule amount of water poses a significant danger to human life as well as to the wildlife dependent on it.

- 7 **HOTS** Describe the various drainage patterns of rivers, giving some examples of Indian rivers.

Ans. There are basically four drainage patterns of rivers

- (i) **Dendritic pattern** This pattern is the most common pattern followed by rivers like the Ganga. This develops where the river channel follows the slope of the terrain. The stream with its tributaries resembles the branches of a tree.

(ii) **Trellis pattern** In this pattern short tributaries meet long trunk streams at near right angles. They are formed on sedimentary rocks of different resistance to erosion. An example is the Narmada river.

(iii) **Rectangular pattern** In this type of pattern, straight tributaries meet straight trunk streams with bends at almost right angles. These are formed on faulted or fractured bedrock.

(iv) **Radial pattern** In this pattern, the streams flow outward from a well defined central point like a volcano or other round uplift of land.

Note No Indian river can be given as examples of rectangular and radial drainage patterns.

8 [HOTS] 'Rivers have been of fundamental importance throughout human history'. How do rivers affect economy of a country? Explain.

Ans. Rivers have been of fundamental importance throughout human history. Water from the rivers is a basic natural resource, essential for various human activities. Therefore, the river banks have attracted settlers from ancient times. These settlements have now become big cities.

The rivers are important for India's development, as it is mostly an agriculture based economy and river water is used for irrigation and hydro-power generation. Multi-purpose dams provide all these features.

Rivers are also culturally and religiously significant for India. The Kumbh Mela (held every three years), is celebrated on the banks of major rivers. They also provide many tourist spots and places of religious significance for people to visit. Examples of such places are Haridwar, Prayag (Allahabad) and Varanasi.

9 [HOTS] Explain the differences between the Indus basin and the Ganga basin in tabular form.

Ans. Differences between the Indus basin and the Ganga basin are as follows

Indus Basin	Ganga Basin
Formed by the Indus river and its tributaries like the Ravi, Chenab, Sutlej, Jhelum, Beas, etc.	Formed by the Ganga river and its tributaries like the Yamuna, Son, Ghaghara, Gomati, Kosi, Gandak, etc.
Located in Jammu and Kashmir, Punjab, Haryana, Himachal Pradesh and Rajasthan (besides Pakistan).	Located in Uttarakhand, Haryana, Uttar Pradesh, Bihar, Madhya Pradesh, Jharkhand and West Bengal (besides Bangladesh).
It has fertile land and a dense network of canals for irrigation.	Irrigation requirement is less as it has high rainfall.
Separated from the Ganga Basin by the Ambala-Saharanpur water divide.	Spreads from Ambala in the North-West to Sunderban in the South-East.

Value Based Questions (VBQs)

[3 Marks each]

1 The textbook states "Imagine that if Srinagar, Nainital and other tourist places did not have a lake, would they have been as attractive as they are today? Have you ever tried to know the importance of lakes in making a place attractive to tourists?" Can you answer these questions?

Ans. Definitely, Srinagar without the Dal lake will not attract so many tourists. Similarly, Nainital without the Naini lake will be deprived of tourists.

The biodiversity of lakes make them important as natural resources for tourism.

Further, the usage of lakes for sports, entertainment, swimming, fishing, etc is of great importance to the public. Use of lake shores for residential, commercial development and recreation purposes has increased the world over.

However, through years of neglect, the lake water has been allowed to deteriorate. This should be looked into by the concerned authorities before lake tourism comes to an end due to the pollution in the lakes.

2 According to rules in India, industries cannot put their untreated sewage into rivers. Why are such rules not followed? Give any three reasons.

Ans. The reasons why industries may be dumping their untreated sewage into rivers are

- (i) The industrialists, running such industries, are insensitive to flouting the rules and harming the people who consume the river water.
- (ii) Government officials are corrupt or negligent in allowing the flouting of rules. They may be bribed by the industrialists to overlook such acts.
- (iii) Sewage treatment costs are high and industrialists want to save money on investment in such a plant, thus increasing their profit.