DRAINAGE:

The term 'Drainage' is used to describe the river system of an area. Small streams flowing from different directions come together to form the main river, which ultimately drains into a large water body. Such as a sea or an ocean. Drainage is an outcome of the evolutionary process of broad relief features of the country.

(i) ***Drainage Basin or River Basin:*** The area drained by a single river system is called a drainage basin or a river basin. The streams from different patterns depending up on the relief, geological and climatic conditions of the area. These patterns are: dendrite, trellis and radial.

(a) ***Dentritic:*** A dentrictic pattern consists of a single main stream with tributaries resembling the branches of a tree.

(b) ***Trellis:*** A trellis is a long river joined by short flowing streams, approximately at right angles and makes at rectangular pattern.

(c) ***Radial:*** In a radial pattern, the streams flow in different directions forms a central peak or domestic structure.

(ii) ***Watershed:*** A watershed is an area of high ground from which water flows down to a river. It may be an upland or a moluntain and separates two adjoining drainage basins.

(iii)There are main Himalayan river systems are:

(a) The Indus System

(b) The Ganga System and

(c) The Brahmaputra System

a) ***The Indus System:*** The Indus river System comprises of fiver rivers-Jehlum,. Chenab, Ravi, Beas and Satluj. Indus rises in Tibet near the Mansarovar Lake. It enters the Indian Territory in Kashmir. It flows through Ladakh, Baltistan and Gilgat and emerges at Attock. The Indus flows southwards across Pakistan and reaches the Arabian Sea, east of Karachi. The length of the Indus is about 2900km. The river Indus flows for 790kms in India drainaging about 117844sq.kms. The river Indus is referred to as Singge – Chhu, or the lion river.

b) ***The Ganga System:*** The Ganga river system rises in the glacier gangotri in the Himalayas at a height of about 6,000 metres. It flows past the mountainous terrians and enters the plains at Haridwar. The Ganga is about 2, 50km long. It has the largest basin and carries more water than the six peninsular rivers combines. The waters of Ganga are swelled by a number of tributaries. Yamuna is the most important tributary. It rises form the glacier Yamnotri. The other important tributaries to the north of Ganga are Gomti, Ghagra, Gandak and Kosi. The Ganga joint the Bay of Bengal after flowing through Bangladesh. In Bangladesh, Ganga is known as Padma until it joint Brahmaputra after which the combined river is called Megna.

c) ***The Brahmaputra System:*** The Brahmaputra River rises in a glacier lying south – east of Mansarovar in western Tibet. It is known as Tsangpo before it turns due south into India. In Bangladesh, it joint the eastern most branch of Ganga. It flows through Arunachal Pradesh and Assam and is joined by several tributaries. The discharge of river Brahmaputra is the greatest of any Indian river. The river is known for creating havoc of floods in Assam and Bangladesh. The Length of the river is 2580kms and has 35 major tributaries.

(iv)The main watershed in peninsular India is formed by the Western Ghats.

(v) The largest river basin in India is the Brahmaputra Basin.

(vi)The river Indus rises in Tibet near the Mansarovar Lake.

(vii) The two headstreams of Ganga are: The Alkananda and the Bhagirathi. They join at Devprayag to from the Ganga.

(viii) The Brahmaputra in its Tibetan part has less silt because it has less volume here.

(ix)The two peninsular rivers that flow through troughs are: (a) The Narmada and (b) The Tapi.

(x) The two famous lakes of Kashmir are: (a) Wular Lake (b) Dal Lake.

Q.2: Natural Lakes and Made-Made Lakes:

NATURAL LAKES	MAN-MADE LAKES
(a) Wular	Gobind Sagar
(b) Dal	Hirakund
(h) Bhimtal	Rana Pratab Sagar
Nainital	Vembanad
Loktak	Nizam Sagar
Barapani	Nagarjuna Sagar
Chilika	Gandhi Sagar
Sambhar	
Pulicat	

Q.3: The significant differences between the Himalayas and the peninsular rivers are:

(a) The rivers of the northern plains are much longer than the peninsular rivers.
(b) The melting snows of the Himalayas keep the rivers of the northern plains flowing all over the year. The peninsular rivers are seasonal in character.
(c) Rivers flowing through the plains are navigable over long stretches. Peninsular rivers have rapids making them unsuitable for navigation.
(d) Rivers of the northern plain are more suited for irrigation as the water supply is assured and are broad and flat in their journey across the plain.
(e) The rivers rolling down from the Himalayas bring huge quantities of silt making the plains alluvial and rich in fertility.
(f) Rivers of the peninsular area with rapids and waterfalls in their course make them suited for setting up of Hydel Projects.

Q.4: Comparison between the east flowing and the west flowing rivers of peninsular plateau:

The east flowing rivers	*The west flowing rivers*
1. The east flowing rivers of the peninsular plateau are the Mahanadi, the Godawari, the Krishna and the Kaveri.	1. The west flowing rivers are the Narmada and the Tapi.
2. These rivers flow into Bay of Bengal.	2. These rivers flow into the Arabian sea.

RIVERS OF PENINSULAR PLATEAU OF INDIA

a) **The Narmada Basin:** the Narmada rises near Amarkantak in Madhya Pradesh. It travels for a distance of 1300 km and meets the Arabian Sea. Its basin is confined to Madya Pradesh and Gujarat.
b) **The Tapi River:** The tapi rises in the Betual district of Madhya Pradesh. It flows in a trough, parallel to the Naramada. Its basin includes parts of Madhya Pradesh, Gujarat and Maharastra.
c) **The Godawari:** It rises in Nashik district of Maharastra. Its length is about 1500 km. It drains into the Bay of Bengal. About 50 percent of its basin lies in Maharastra and Madhya Pradesh, Orissa and Andhra Pradesh share the rest. Due to the size and extent, the Godawari is also known as the Virdha Ganga or the Dakshin Ganga.
d) **The Krishna Basin:** It rises from a spring near Mahabaleshwar nad flows for about 1400km. It flows into the Bay of Bengal. Its drainage basin is shared by Maharashtra, Karnataka and Andhra Pradesh.
e) **The Kaveri:** It rises in the Brahmgir range of the western Ghats. It flows for about 800 km and meets the Bay of Bengal near Kaveripatnam. Its basin is shared by Kerala, Karnataka and Tamil Nadu.

Q.5: RIVERS AS LIFELINESS OF HUMAN CIVILIZATION

Rivers integral parts of the land. Rivers have played a major role in shaping world history. Early civilizations all cam up in the river valleys. A large number of cities important form the view point of religious institutions as well as trade come up at he banks of the rivers. The rivers provide water for drinking and for irrigating the drops. Year after year they have been bringing down new soil and

making the plains fertile. It carries with it not only water but also sediments and dissolved minerals. Rivers have also served as an important rout for water transport. Towns and cities use and Minuses Rivers to carry away their wastes. They have been harnessed for generating hydro-electricity.

Q.6:

Large dams are a great threat to the environment. The building of large dams leads to submergence of land, loss of forests and cultivable lands. It leads to sedimentation and may sometimes lead to major floods resulting in devastation. The building of dams has led to mass displacement of a number of villages. Thousands of people are deprived of their livelihood and shelter.

But, Dams are very important for development they have to be made to better irrigation facilities and generation of hydro-electivity. However, environmental impact assessments and environmental safeguards must be ensured. Proper planning can ensure that large dams of not threat the environment.

LAKES

A body of water lying on a hollow in the earth's surface and being entirely surrounded by land is known as a lake. Lakes can be natural or man-made. Lakes are an important reservoir of fish and wild-marine like. The lakes in the mountainous regions are often the watershed for small streams that flow out of it. In the plains, they offer scope for irrigation besides attracting tourists and picnickers.

LAKES OF KASHMIR

The famous lakes of Kashmir are Dal Lake, Wular Lake, Nageen Lake, Manasbal Lake.

THE WULAR LAKE

The world wular means 'cave'. The Wular Lake in Kashmir is the result of tectonic activity. It is situated on the western side of Kashmir encompassed by high mountains of Pir Panjal range. It is in Baramuulla district. The lake is spread over an area of 125kms and is situated at a height of 1580 meters form the sea level. The lake is full of fish, weeds and singhara. It is the largest natural freshwater lake in India.

DAL LAKE

Dal-Lake is situated in the Srinagar city at eh foot of Zabarwan hills. The lake is famous world-over for its scenic beauty. The famous Mughal Gardens lie on the periphery of the lake. The lake is spread over a huge area and sustains a huge marine life. But, due to pollution caused by the discharge of untreated effluents are threatening the very existence of the lake. The lake is fast losing its ability to sustain like . the lake is not only decreasing in size but its water has become dirty, foul smelling and a breeding ground for infections.

POLLUTION OF RIVERS

The rivers have sustained the society of all kinds form ancie3nt times. But with the rapid growth of civilizations, they have got polluted. The character of rivers has undergone a sea change with rapid industrializations. Industrial as well as human pollutants form cities on the banks of the rivers are discharged into the rivers with the result many rivers have water that is unfit for drinking or irrigation purposes. Solid waste discharged into the rivers clogs the flow of the river turning it into a stagnant drain. The river has been felt on the marine life. There has been a tremendous decrease in the production of fish and other forms of life in rivers. The people of Kashmir used the waters of the Jehlum and Dal Lake for drinking and cooking. But now we can't even think of doing so.

Pollution control in respect of rivers has been high on the agenda of state and central governments. The way out is to strictly deal with industries that discharge untreated chemical waste into the rivers. Similarly, the local bodies discharging sewage in the rivers need to be helped to set up treatment plants. There should be interception and diversion of major drains carrying sewage and industrial wastes. A mass awareness campaign can be launched in the catchments areas to make the people aware about the importance of water bodies.

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