NCERT MOST IMPORTANT QUESTIONS CLASS – 11 GEOGRAPHY GEOGRAPHY-INDIA PHYSICAL ENVIRONMENT CHAPTER- 3 DRAINAGE SYSTEM

Question 1.
Differentiate between:
(a) Himalayas rivers and the Peninsular rivers.
Answer:
Difference between Himalayas Rivers and the Peninsular rivers.

Aspects	Himalayan rivers	Peninsular rivers
Place of origin	Himalayan mountains covered with glaciers	Peninsular plateau and central highland
Nature of flow	Perennial; receive water from glacier and rainfall	Seasonal, dependent on monsoon rainfall
Type of drainage	Antecedent and consequent leading to dendritic pattern in plains.	Super imposed : rejuvenated resulting in trellis and rectangular pattern
Nature of river	Long course, flowing through the mountains. Experiencing headwater erosion and river capturing in plains meandering and shifting of course.	Smaller, fixed course with well adjusted valleys.
Catchment area	Very large basins	Relatively smaller basin
Area of river	Young and youthful, active and deepening of the valleys.	Old rivers with graded profile, and have almost reached their base levels
Examples	Indus, Ganges and Brahmaputra and their tributaries.	Peninsular Plateau Chambal, Betwa, Central Highlands, Godavari, Krishna, etc.

(b) Consequent rivers and Antecedent rivers
Answer:
Difference between Consequent rivers and Antecedent rivers

Basis	Consequent rivers	Antecedent rivers
Shape	These rivers maintain their original shapes, deposits, the rise of land due to folding. The rivers keep on following in the same direction.	It is an uplift area the rivers flow in the direction resulting as consequent of the slope
Age	These rivers are older than the old mountain.	These rivers are formed after the uplift of an area.
Gorges	These rivers cut deep gorges due to down cutting.	These rivers do not form gorges.
Examples	Trans- Himalayan rivers such as Indus, Satluj, represent consequent rivers.	The eastward flowing river of peninsular plateau which flow according to the slope are antecedent rivers.

Question 2.
Differentiate between canyon, gorge and river valley.
Answer:
A canyon is a deep valley with steep sides, think of the grand canyon most famously to visualise what this is. A gorge is a deep ravine, which usually has a river running through it—though this doesn't have to be the case. Finally a valley is any depression, usually of a certain length, in the surface of the land and often contains a river. So, a canyon is a specific type of valley, with particularly steep sides. A gorge is a particularly deep depression, and will usually contain a river.

Question 3.
What makes a river system? Explain its components.
Answer:
River system

- A river is a body of water, which flows into channel from a higher elevations to a lower elevation rivers usually originate from lake or melting snow on top of mountains flow down hill and join sea or ocean. The place from where the river originates is known as the source, and where it ends is known as the mouth.
- From the source , the river flows along a path which is known as its course. The course of a river can be divided into three parts, the upper course, the middle course and the lower course.
- In the upper course, the river flows with great force through a narrow and shallow channel. Only a small amount of water is transported. The gradient slope of river is very steep.
- In the middle course, the force of the river reduces its flow through gentle gradient such as plains. Many small stream or river join the main river in the middle course resulting in widening of the river channel. The small streams are known as tributaries.
- The river finally flows into lake, sea or ocean. The part of the river that enters the sea is known as the river mouth.

- A river and its tributaries together form a drainage basin. A drainage basin is an area obtained by two main river and its tributaries and drainage basin is separated from adjacent basins by a hill, a ridge or mountain which is known as a drainage divide or watershed.

Question 4.
What factors affect speed of a river?
Answer:
Factors affecting the speed of a river: The main factor affecting the speed of a river are the gradient and roughness of the channel and the wetled perimeter gradient.

1. Gradient: It refers to the drop in elevation of the river channel as the river flows down the hill. If the gradient is steep, the rivers flow quickly, whereas if the gradient is gentle the river flows slowly. In the upper course, the river flows rapidly through a steep gradients. On the other hand, the middle and the lower course, the river flows gently through a greater gradient.

2. Roughness: As water flows through a river channel; it encounters obstacles such as rocks, boulders, numerous river bed and underwater vegetation obstacles cause friction between the river and the channel. Rougher channels will reduce the speed of the river due to the higher friction.

3. Wetled perimeter: When the wetled perimeter is large, more water comes in contact with the channel causing more friction. When the friction is high the flow of the river becomes slow on the other hand when the wetled perimeter is small, less water flow along the channel causing less friction. When the friction is less, flow of water is fast.

Question 5.
Explain the evolution of Himalayan river system.
Answer:
There are difference of opinion about the evolution of the Himalayan river system. However, geologists believe that a mighty river called Shiwalik or Indo-Brahma traversed the entire longitudinal extent of the Himalaya from Assam to Punjab and onwards to Sind, and finally discharged into the Gulf of Sind near lower Punjab during the Miocene period some 5-24 million years ago. The remarkable continuity of the Shiwalik and its lacustrine origin and alluvial deposits consisting of sands, silt, clay, boulders and conglomerates support this viewpoint.

The dismemberment was probably due to the Pleistocene upheaval in the western Himalayas, including the uplift of the Potwar Plateau (Delhi Ridge), which acted as the water divide between the Indus and Ganga drainage systems. Likewise, the down-thrusting of the Malda gap area between the Rajmahal hills and the Meghalaya plateau during the mid-pleistocene period, diverted the Ganga and the Brahmaputra systems to flow towards the Bay of Bengal.

Question 6.
Explain the evolution of Peninsular drainage system
Answer:
Three major, geological events in the distant past have shaped the present drainage systems of Peninsular India:

- Subsidence of the western flank of the Peninsula leading to its submergence below the sea during the early tertiary period. Generally, it has disturbed the symmetrical plan of the river on either side of the original watershed.
- Upheaval of the Himalayas when the northern flank of the Peninsular block was subjected to subsidence and the consequent trough faulting.
- Slight tilting of the Peninsular block from north-west to the south-eastern direction gave orientation to the entire drainage system towards the Bay of Bengal during the same period.

Question 7.
What are the problems associated with the use of river water?
Answer:
There are some problems in river water usage. Some of these are:

- No availability in sufficient quantity
- River water pollution
- Load of silt in the river water
- Uneven seasonal flow of water
- River water disputes between states
- Shrinking of channels due to the extension of settlements towards the thalweg.

Question 8.
What are the causes of pollution of river water?
Answer:
Major causes of pollution of river water:

- Growing Population,
- Poverty,
- Urbanization,
- Industrialization,
- Agricultural run-off and Improper Agricultural Practices, and
- Religious and Social Practices.

Question 9.
What measures do you suggest to reduce pollution of rivers?
Answer:
River pollution generally originates from industrial effluents, agricultural run-off and domestic sewage, which is resulting in environmental-economic loss to the country. Rapid industrialization and urbanization, accompanied by rural exodus to urban areas have had their evil consequences, generally on environment, and particularly on rivers. The law

dealing with the task of prevention and control of river pollution, is needed to be set in motion along with public awareness about the importance of pollution free rivers, so that the rivers can be saved from the curse of pollution, and the precious money of the Government exchequer can be saved from expenditure on the river cleaning programmes.

Question 10.
Can the problems of flood and drought be solved or minimised by transferring the surplus water from one basin to the water deficit basins? Do we have some schemes of inter-basin linkage?
Answer:
Yes, these problems be solved or minimised by transferring the surplus water from one basin to the water deficit basins. During the rainy season, much of the water is wasted in floods and flows down to the sea. When there is a flood in one part of the country, the other area suffers from drought. We do have such schemes:

- Periyar Diversion Scheme
- Indira Gandhi Canal Project
- Kurnool-Cuddapah Canal
- Beas-Satluj Link Canal
- Ganga-Kaveri Link Canal