Geography

(India People and Economy) (Chapter – 6) (Exercises)
(Water Resources)
(Class – XII)

Question 1:

Choose the right answers of the followings from the given options.

(i) Which one of the following types describes water as a resource?

(a) Abiotic resource
(b) Biotic resource
(c) Non-renewable resource
(d) Non-cyclic resource

(ii) Which one of the following south Indian states has the highest groundwater utilization (in percent) of its total ground water potential?

(a) Tamil Nadu
(b) Karnataka
(c) Andhra Pradesh
(d) Kerala

(iii) The highest proportion of the total water used in the country is in which one of the following sectors?

(a) Irrigation
(b) Industries
(c) Domestic use
(d) None of the above

Answer 1:

(i) (b) Biotic resource
(ii) (a) Tamil Nadu
(iii) (a) Irrigation

Question 2:

Answer the following questions in about 30 words.

(i) It is said that the water resources in India have been depleting very fast. Discuss the factors responsible for depletion of water resources.

(ii) What factors are responsible for the highest ground water development in the states of Punjab, Haryana and Tamil Nadu?

(iii) Why the share of agriculture sector in total water used in the country is expected to decline?

(iv) What can be possible impacts of consumption of contaminated/unclean water on the people?

Answer 2:

(i) There are many factors leading to fast depletion of water resource in India. These are as follows:

- India is the second most populous country in the world and its population is growing rapidly. Growing population is a big burden on natural resources.
- Contamination of clean rivers is a major reason.
- India is a developing economy and hence to accelerate its GDP, India's energy needs are rapidly increasing leading to a rise in global warming and climate change. Therefore, more amounts of surface and ground water is being evaporated due to excessive heat.

(ii) States like Haryana, Punjab and Tamil Nadu accounts for largest share of water resource development because the land is extremely fertile and these states provides maximum needs of food grains to entire nation. Therefore, Punjab has earned the name of "Food Basket of the Country". 'Green revolution' wrote its success stories in Haryana and Punjab. In addition, Punjab is watered by an extensive canal system.

(iii) At present the agriculture accounts for the highest share of utilization for both ground and surface water resources and has the largest share in economy of the country, but in recent times the share of secondary and tertiary activities have been on the rise in the economy. This in turn will reduce the share of the agriculture and increase the share of industrial and commercial consumption of all resources including the water resources of the country.

(iv) Drinking water contains unsafe levels of contaminants; it can cause health effects, such as gastrointestinal illnesses, nervous system or reproductive effects, and chronic diseases such as cancer. Factors that can influence whether a contaminant will lead to health effects include the type of contaminant, its concentration in the water, individual susceptibility, the amount of water consumed, and the duration of exposure. If water sources are contaminated with radium or radon gas, humans might not notice an immediate health effects. However, long term exposure has been linked to cancer and heart disease.

Question 3:

Answer the following questions in about 150 words.

(i) Discus the availability of water resources in the country and factors that determine its spatial distribution?

(ii) The depleting water resources may lead to social conflicts and disputes. Elaborate it with suitable examples?

(iii) What is watershed management? Do you think it can play an important role in sustainable development?

Answer 3:

(i) India has world's 4 percent water resource in the country. The total water available from precipitation in the country in a year is about 4,000 cubic km. The availability from surface water and replenish able groundwater is 1,869 cubic km. Out of this, only 60 per cent can be put to beneficial uses. Thus, the total utilizable water resource in the country is only 1122 cubic km.

Factors that determine its spatial distribution of water resources are:

- Surface Water: There are four major sources of surface water. These are rivers, lakes, ponds and tanks. There are about 10360 rivers and their tributaries longer than 1.6km each in the country.
- Groundwater: The total replenishable groundwater resources in the country are about 432 cubic km. The level of groundwater utilization is relatively high in the river basins lying in north-western region and parts of south India. The groundwater utilization is very high in the states of Punjab, Haryana, Rajasthan, and Tamil Nadu. However, there are States like Chhattisgarh, Odisha, Kerala, etc., which utilize only a small proportion of their groundwater potentials. States like Gujarat, Uttar Pradesh, Bihar, Tripura and Maharashtra are utilizing their groundwater resources at a moderate rate.
- Lagoons and Backwaters: India has a vast coastline and the coast is very indented in some states. Due to this, a number of lagoons and lakes have formed. The States like Kerala, Odisha and West Bengal have vast surface water resources in these lagoons and lakes. Although, water is generally brackish in these water bodies, it is used for fishing and irrigating certain varieties of paddy crops, coconut, etc.

(ii) As water is key to life, water scarcity is likely to provoke conflict. The massive rise in the demand for blue water in the agricultural and industrial sector starting in the 1950s, together with continuous population growth, have amplified water scarcity in several parts of the country. Beyond triggering conflict onset in its own right, water also plays a critical role in exacerbating already existing tensions. Longer periods without rainfall, combined with bad water management and rapid population growth, caused a surge in thirst and hunger as around half of the population of many states struggled to fulfill their basic daily water needs.

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Water conflicts can occur on the intrastate and interstate levels. Interstate conflicts occur between two or more neighboring countries that share a transboundary water source, such as a river, sea, or groundwater basin. For example, the Middle East has only 1% of the world's freshwater shared among 5% of the world's population. Intrastate conflicts take place between two or more parties in the same country. An example would be the conflicts between farmers and industry (agricultural vs industrial use of water).

Major Inter-State River Disputes

River (s)	States
Ravi and Beas	Punjab, Haryana, Rajasthan
Narmada	Madhya Pradesh, Gujarat, Maharashtra, Rajasthan
Krishna	Maharashtra, Andhra Pradesh, Karnataka, Telangana
Vamsadhara	Andhra Pradesh & Odisha
Cauvery	Kerala, Karnataka, Tamil Nadu and Puducherry
Godavari	Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh, Odisha
Mahanadi	Chhattisgarh, Odisha
Mahadayi	Goa, Maharashtra, Karnataka
Periyar	Tamil Nadu, Kerala

The resolution of water dispute is governed by the Inter-State River Water Disputes Act, 1956. According to its provisions, if a State Government makes a request regarding any water dispute and the Central Government is of opinion that the water dispute cannot be settled by negotiations, then a Water Disputes Tribunal is constituted for the adjudication of the water dispute.

(iii) Watershed management basically refers to efficient management and conservation of surface and groundwater resources. It involves prevention of runoff and storage and recharge of groundwater through various methods like percolation tanks, recharge wells, etc. However, in broad sense watershed management includes conservation, regeneration and judicious use of all resources – natural (like land, water, plants and animals) and human with in a watershed. It is the process of implementing land use practices and water management practices to protect and improve the quality of the water and other natural resources within a watershed.

Importance of watershed management in sustainable development:

- Watershed management helps to control pollution of the water and other natural resources in the watershed. It can work to identify what kinds of pollutants are present and track how they entered the watershed.
- A healthy watershed can also give a financial boost to the industries of tourism, agriculture, forestry, and mining. When there is water infrastructure for dams included in a watershed, its good health can also ensure energy production and water supply for agriculture, industry purposes, and households.
- There is immense potential of increasing agricultural productivity and farmer's income in areas where it doesn't rain uniformly.