

WATER RESOURCES

SHORT ANSWER TYPE QUESTIONS [3 MARKS]

1. **Which multipurpose project is built on River Satluj How this project has led to the development of the country?**

Answer:

The multipurpose project built over River Satluj is Bhakra Nangal.

This project has led to the development of the country in the following ways.

- The area under irrigation is increased as ample amount of water is released from the dam.
- It has also been successful in harnessing electricity at a large scale.

2. **“Water is a very important and critical resource in India.” Support the statement by explaining any three points.**

Answer:

Water is a very important and critical resource in India. The following points support this statement.

- Water resources are a significant part of the ecological cycle, which enable the existence of all living beings on the earth.
- Water resources help to carry out several agricultural and agriculture-related activities, thus playing a major role in the development of agricultural production.
- Water also contributes significantly to the development of industry as it supplies water to various water-based and power-based industries.

3. **What is palar parti? What is its significance in the arid regions of Rajasthan?**

Answer:

The rainwater which is stored in underground tanks is potable water. It is a reliable source of drinking water. It is called palar pani.

In the arid regions of Rajasthan, it is important in the following ways.

- It is the main source of drinking water, when all other sources have dried up.
- It is considered the purest form of drinking water.
- In summer, these tanks would keep the underground rooms, adjoining them, clean.

4. **Analyse three major causes of water scarcity in India**

Answer:

The following are the reasons for water scarcity in India.

- **Increased demand for water:** The growing population needs more water for domestic purposes and to produce more food. Agricultural purposes: For agricultural purposes, water resources are being over-exploited. More food needs to be grown for the increasing population. Intensive industrialisation and urbanisation: The increasing number of industries need more water and power to run the machinery. Hydroelectric power contributes twenty-two per cent of the electricity produced. The urban centres with large population and modern lifestyles have added to the problem of water scarcity. Over-exploitation of water resources: In some cities, housing societies have their own groundwater pumping devices to meet their needs. This has caused the depletion of water resources in several areas.
- **Bad quality of water:** The water is getting polluted by domestic and industrial wastes, chemical pesticides and fertilizers.

5. **Describe any three different rainwater harvesting systems practised in India.**

Answer:

The rainwater harvesting systems practised India are as follows.

- In hills and mountainous regions, people built diversion channels like guls or kuls for agriculture.
- Inundation canals were built in the floodplains of Bengal, to irrigate the fields.
- In arid and semi-arid regions of Rajasthan, agricultural fields were converted into room-fed storage structures that allowed the water to stand and moisten the soil.

6. **What is a multipurpose river valley project? Give any four objectives of the multi-purpose river valley projects.**

OR

Examine the importance of the river valley projects in the development of hydel power and irrigational facilities in India.

OR

Give any four objectives of the multipurpose river valley projects.

Answer:

Multipurpose river valley projects generally refer to large dams that serve several purposes in addition to impounding the water of a river. The water blocked is used for various purposes.

The following are the four objectives of multi-purpose river valley projects.

- Irrigation of water deficit areas
- Electricity generation
- Flood control
- Water supply for domestic and industrial uses
- Recreation
- Inland navigation
- Fish breeding

7. **Explain three traditional methods of rainwater harvesting in India.**

Answer:

The rainwater harvesting systems practised in India are as follows.

- In hills and mountainous regions, people built diversion channels like guls or kuls for agriculture.
- Inundation canals were built in the floodplains of Bengal, to irrigate the fields.
- In arid and semi-arid regions of Rajasthan, agricultural fields were converted into room-fed storage structures that allowed the water to stand and moisten the soil.

8. **Why are different water harvesting systems considered a viable alternative in a country like India.**

Answer:

Different water harvesting systems are considered a viable alternative in a country like India because of the following reasons.

- In ancient India, along with sophisticated hydraulic structures, there existed an extraordinary tradition of rainwater harvesting system.
- People had in-depth knowledge of rainfall regimes and soil types and developed a wide range of rainwater harvesting techniques to harvest groundwater, rainwater, river water and flood water in keeping with the local ecological conditions and their water needs.
- For example, in the hilly and mountainous regions, people built diversion channels like guls or 'kuls' of western Himalayas for agriculture. Rooftop harvesting is practiced in Rajasthan to store drinking water. In West Bengal, people developed inundation channels to divert flood waters to irrigate their fields. In semi-arid and arid regions of Rajasthan, agricultural lands were converted into rain-fed storage structures that allowed the water to stand and moisten the soil like the khadins in Jaisalmer and Johads in other parts of Rajasthan.

9. **Why is the need for water increasing day by day? Explain three reasons.**

Answer:

The need for water is increasing day by day due to growing population, intensive industrialisation and urbanisation.

- A large population means more water is required not only for domestic use but also for increasing food production. To increase food production, water resources are over-exploited to increase the area under irrigation and dry season agriculture. Some of the rich farmers have their own wells in their farms for irrigation to increase food production. This in turn has resulted in lowering of groundwater levels, which affects water availability.
- Multinational companies are the heavy users of freshwater for power, which puts tremendous pressure on water resources. Moreover, multiplying urban centres with large and dense populations and urban lifestyles have not only added to water and energy needs but have further aggravated the problem.
- In cities or housing colonies, they have their own groundwater pumping devices to meet their water needs, resulting in over-exploitation and depletion of water resources in many cities.

10. Water resources are depleting fast in India and water is a necessity for life. Suggest three measures to conserve water.

Answer: Water is a resource of utmost importance and waterbodies should not be polluted. Given the present scenario, even the multi-purpose projects are under objection.

Three ways to conserve water are as follows.

- Rainwater Harvesting: Rainwater, groundwater and river water can be harvested and used for agriculture purposes and moisten the soil.
- Do not let the faucet run while brushing teeth, bathing or cleaning vegetables.
- Check for leaks in pipes, hoses, faucets and couplings.

11. Explain any two consequences of changing crop pattern due to irrigation.

Answer: The following are the two consequences of changing crop pattern due to irrigation.

- It has resulted in ecological problems like salinisation of the soil.
- It has also transformed the social landscape by increasing the gap between the rich landowners and landless poor.

12. Describe the procedure for rooftop rainwater harvesting.

Answer: Rooftop rainwater harvesting involves a number of steps as follows.

- Rooftop rainwater is collected using a PVC pipe.
- The collected water is filtered by using sand and bricks.
- Water is taken to the sump through underground pipes for immediate use.
- Excess water is taken from the sump to the well.
- Water in the well recharges the underground water.

LONG ANSWER TYPE QUESTION [5 MARKS]

13. Explain any three reasons due to which large dams have come under great opposition in recent years.

Answer: In recent times the dams have come under great opposition because of the following reasons.

- The construction of dams resulted in problems like excessive sedimentation, waterlogging, soil erosion, sudden floods, large-scale deforestation, extinction of species, displacement of communities and loss of livelihood of tribal communities. Dams also fragment rivers, making it difficult for aquatic fauna to migrate especially for spawning.
- Dams that were built to control floods have triggered floods due to sedimentation in the reservoir. Big dams have been unsuccessful in controlling floods at the time of excessive rainfall. The release of water from the dams during heavy rainfall, worsens the situation.
- Multi-purpose projects cause earthquakes, water-borne diseases and pollution due to the excessive use of water.

14. Why is rooftop rainwater harvesting important in Rajasthan? Explain.

Answer: Rooftop rainwater harvesting is important in Rajasthan because of the following reasons.

- The rainwater stored in tanks is an extremely reliable source of drinking water when all other sources are dried up.
- Rainwater is considered the purest form of natural water.
- Many houses have constructed underground rooms adjoining the tanks to beat the summer heat
- as it would keep the room clean.
- There is a lack of perennial rivers in Rajasthan.
- The rainfall is not reliable in this region.

15. “In recent years, the multipurpose projects and large dams have come under great scrutiny.” Give reasons.

OR

Mention any four disadvantages of multi purpose projects.

OR

How may the multipurpose river valley projects become harmful for the country? Explain with four examples.

OR

Why are multipurpose projects facing resistance? Explain with three reasons.

Ans. (i) Adverse effect on the fertility of the soil: Due to the construction of dams, there are no annual floods in the river. And

because of this, the soil of the downstream region does not get nutrient rich “silt”. This decreases the fertility of the soil.

(ii) Adverse impact on aquatic life: Due to the construction of dams on the rivers, the fish in the downstream area do not get sufficient nutrient material. Regulating and damming of rivers affect the natural flow of water causing poor sediment flow downward, and excessive sedimentation at the bottom of reservoir, resulting in rockier stream beds and poorer habitats for the rivers aquatic life. Dams also fragment rivers making it difficult for aquatic fauna to migrate for spawning i.e., to produce eggs.

(iii) Displacement of local communities : The building of large dams results in displacement of local communities. The local people often have to give up their land and livelihood and their meagre access and control over resources for the greater food of the nation.

(iv) Change in the cropping pattern : The multipurpose projects are responsible for providing assured means of irrigation to farmers. Due to this, most of the farmers have changed the cropping pattern shifting to water intensive and commercial crops. This has led to salinisation of soil leading to ecological imbalance.

16. How do the multipurpose river projects affect the aquatic life ? Explain.

OR

Explain the ecological problems being faced due to the multi-purpose river projects.

Ans. In recent years, the multi-purpose projects and large dams have come under great scrutiny and opposition for a variety of reasons :

(i) Regulating and damming of rivers affect their natural flow causing poor sediment flow and excessive sedimentation at the bottom of the reservoir, resulting in rockier streambeds and poorer habitats for the rivers, as well as the aquatic life.

(ii) Dams also fragment rivers making it difficult for the aquatic fauna to migrate, especially for spawning.

(iii) The reservoirs that are created on the flood. Plains also submerge the existing vegetation and soil leading to its decomposition over time.

(iv) Irrigation has also changed the cropping pattern of many regions with farmers shifting to

water intensive and commercial crops. This has great ecological consequences like salinisation of the soil.

17. Explain the quantitative and qualitative aspects of water scarcity.

OR

Water is available in abundance in India even then scarcity of water is experienced in major parts of the country. Explain with four examples.

Ans. (i) Quantitative aspect : This aspect is related to the availability of water resources. The availability of water resources varies over space and time mainly due to variations in seasonal and annual precipitation. However, water scarcity in most cases is caused by over-exploitation, excessive use and unequal access to water among different social groups.

(ii) Qualitative aspect : Now, let us consider another situation where water is sufficiently available to meet the needs of the people, but, the area still suffers from water scarcity. This scarcity may be due to bad quality of water. Lately, there has been a growing concern that even if there is ample water to meet the needs of the people, much of it may be polluted by domestic and industrial wastes, chemicals, pesticides and fertilizers used in agriculture, thus, making it hazardous for human use.

18. Why is there an urgent need to conserve and manage our water resources ? Mention three reasons.

OR

Why is it necessary to conserve water resources in India ? Explain.

OR

Why is it essential to conserve, and manage our water resources ? Explain any three reasons.

OR

Why we should conserve our water resources ? Explain any three reasons.

Ans. (i) Precondition for life : Water is necessary for life on earth. It is believed that life originated in water before it invaded land. Water is in fact a precondition of life.

(ii) Water essential for crops: Cultivation of crops depends on the availability of water. Water dissolves minerals and other nutrients in the ground. The roots of the plants draw this nutritious water for the soil. India is an agricultural country so availability of water is a must.

(iii) Water and industries : Industries need water as coolant, solvent, raw material, etc.

(iv) Water for daily life : Water is also used for drinking and domestic consumption. The growing urbanisation with its modern lifestyle has been demanding greater share of water day by day.

(v) Water an important component of ecosystem : Conservation of water is also important to prevent degradation of our natural ecosystems.

(vi) Water scarcity : It is essential to conserve and manage water because its overuse and misuse has lead to water scarcity.

19. How have the growing population, industrialisation and urbanisation led to water scarcity? Explain.

OR

Explain any four reasons responsible for water scarcity in India.

OR

How have industrialisation and urbanisation aggravated water scarcity in India ?

OR

Give three reasons for water scarcity in post independent India.

OR

‘Three-fourths of the earth’s surface is covered with water but there is still scarcity of water across the globe.’ Explain giving three reasons.

Answer:

The following are the reasons for water scarcity in India.

- **Increased demand for water:** The growing population needs more water for domestic purposes and to produce more food.
- **Agricultural purposes:** For agricultural purposes, water resources are being over-exploited. More food needs to be grown for the increasing population.
- **Intensive industrialisation and urbanisation:** The increasing number of industries ‘ need more water and power to run the machinery. Hydroelectric power contributes twenty-two per cent of the electricity produced. The urban centres with large population and modern lifestyles have added to the problem of water scarcity.
- **Over-exploitation of water resources:** In some cities, housing societies have their own groundwater pumping devices to meet their needs. This has caused the depletion of water resources in several areas.
- **Bad quality of water:** The water is getting polluted by domestic and industrial wastes, chemical pesticides and fertilizers.

