Water Resources

Previous Years' CBSE Board Questions

Water Scarcity and the Need for Water Conservation and Management; Multi-purpose River Projects and Integrated Water Resources Management; Rainwater Harvesting

MCQ

1. In which of the following States Tungabhadra Dam is located? (2023)
(a) Tamil Nadu
(b) Kerala
(c) Andhra Pradesh
(d) Karnataka

2. Which one of the following factors is mainly responsible for declining water level in India? (Term-1, 2021-22)
(a) Irrigation
(b) Industrialisation
(c) Urbanisation
(d) Over-utilisation

VSA (1 mark)

3. Name any one river valley project which has significantly contributed to the loss of forests. (2014)

SAI (3 marks)

4. How are traditional rainwater harvesting methods being carried out to conserve water resources in different regions? Explain with examples. (2019 C)

5. "Archaeological and historical records show that from ancient times we have been constructing sophisticated hydraulic structures in India." Substantiate the statement by giving three evidences. (2019 C)

6. "Water scarcity may be an outcome of large and growing population in India." Analyse the statement. (Delhi 2019)

7. "Multi-purpose projects and large dams have been the cause of many new social movements." Highlight the concerns related to such movements. (2019)

8. "Urbanisation has added to water scarcity." Support the statement with arguments. (Al 2019)

9. "The dams that were constructed to control floods have triggered floods." Analyse the statement. (2019)

10. "Water harvesting system is an effective measure to reduce the problem of water scarcity." Justify the statement. (Al 2019)

11. How has Shillong solved the problem of acute shortage of water? (2019)

12. How has Tamil Nadu solved the problem of acute shortage of water? (2019)

13. How has ever increasing number of industries in India made worse position by exerting pressure on existing freshwater resources? Explain. (2018)

14. "Water scarcity is increasing day-by-day." Justify the statement citing three reasons. (2017) An

15. Explain the working of underground tanks as a part of rooftop rainwater harvesting system practised in Rajasthan. (2016)

16. Describe the working of roof top rainwater harvesting being practised in India. (2016)

17. Mention any four main objectives of multi-purpose river valley projects. Name any two Multi-purpose Projects of India. (2015)

18. What is Bamboo Drip Irrigation? Mention any two features of it. (2015)

19. How have industrialisation and urbanisation posed a great pressure on existing freshwater resources in India? Explain with examples. (2015)

20. Why did Jawaharlal Nehru proclaim the dams as the "temples of modern India"? Explain any three reasons.(2014)

21. Water scarcity in most cases is caused by over- exploitation, excessive use and unequal access to water among different social groups. Explain the meaning of the statement with the help of examples. (2014)

22. List any three advantages and three disadvantages
of multipurpose river project. (2014)

SA II (4 marks)

23. Read the given source and answer the questions that follow:

RAINWATER HARVESTING
Many thought that given the disadvantages and rising resistance against the multi purpose projects, water harvesting system was a viable alternative, both socio-economically and environmentally. In ancient India, along with the sophisticated hydraulic structures, there existed an extraordinary tradition of water harvesting system. People had in-depth knowledge of rainfall regimes and soil types and developed wide ranging techniques to harvest rainwater, groundwater, river water and flood water in keeping with the local ecological conditions and their water needs. In hill and mountainous regions, people built diversion channels like the 'guls' or 'kuls' of the Western Himalayas for agriculture. 'Rooftop rainwater harvesting' was commonly practised to store drinking water, particularly in Rajasthan. In the flood plains of Bengal, people developed inundation channels to irrigate their fields. In arid and semi- arid regions, agricultural fields 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.
(i) Why is water harvesting system a viable alternative?
(ii) Describe the process of 'rooftop rainwater harvesting
(iii) Mention any two methods adopted by ancient India for water conservation. (2023)

LA (5 marks)

24. Describe the procedure for rooftop rainwater harvesting. (2016)

25. Explain any four reasons responsible for water scarcity in India. (2015)

26. Why is rooftop water harvesting important in Rajasthan? Explain. (2014)

Water Scarcity and the Need for Water Conservation and Management; Multi-purpose River Projects and Integrated Water Resources Management; Rainwater Harvesting

SA II (4 marks)

1. Read the following extract and answer the questions that follow:
Narmada Bachao Andolan or Save Narmada Movement is a Non-Governmental Organisation (NGO) that mobilised tribal people, farmers, environmentalists and human rights activists against the Sardar Sarovar Dam being built across the Narmada river in Gujarat. It originally focused on the environmental issues related to trees that would be submerged under the dam water. Recently, it has re-focused the aim to enable poor citizens, especially the oustees (displaced people) to get full rehabilitation facilities from the government. People felt that their suffering would not be in vain... accepted the trauma of displacement believing in the promise of irrigated fields and plentiful harvests. So, often the survivors of Rihand told us that they accepted their sufferings as sacrifice for the sake of their nation. But now, after thirty bitter years of being adrift, their livelihood having even being more precarious, they keep asking: "Are we the only ones chosen to make sacrifices for the nation?"
Source: S. Sharma, quoted in 'In the Belly of the River.' Tribal conflicts over development in Narmada valley. A. Baviskar. 1995.
(i) With what objective 'Sardar Sarovar Dam' was built?
(ii) Analyse the reason of protest by the tribal people.
(iii) Highlight the issues on which 'Save Narmada Movement' worked on.

(2022-23)

ANSWERS

Previous Years' CBSE Board Questions

1. (d): Karnataka
2. (d): Over-utilisation is mainly responsible for declining water level in India. As the population increases, the consumption of water also increases.
3. Sardar Sarovar Dam
4. (i) In hill and mountainous regions, people-built diversion channels like the

'guls' or 'kuls' of the Western Himalayas for agriculture.
(ii) 'Rooftop rainwater harvesting' was commonly practiced to store drinking water, particularly in Rajasthan.
(iii) In the flood plains of Bengal, people developed inundation channels to irrigate their fields.
(iv) In arid and semi-arid regions, agricultural fields 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.
(v) In dry regions of Rajasthan, particularly in Bikaner, Phalodi and Barmer, almost all the houses traditionally had underground tanks or tankas for storing drinking water.

5. In the first century B.C., Sringaverapura near Allahabad (Prayagraj) had sophisticated water harvesting system channelling the flood water of the river Ganga. During the time of Chandragupta Maurya, dams, lakes and irrigation systems were extensively built. Evidences of sophisticated irrigation works have also been found in Kalinga, (Odisha), Nagarjunakonda (Andhra Pradesh), Bennur (Karnataka), Kolhapur (Maharashtra), etc. In the 11th century, Bhopal Lake, one of the largest artificial lakes of its time was built. In the 14th century, the tank in Hauz Khas, Delhi was constructed by Iltutmish for supplying water to Siri Fort area.

6. A large population leads to greater demands for water.
(i) A large population means more water not only for domestic use but also to produce more food in various agricultural practices.
(ii) Most of the Indian cities are facing the problem of water scarity due to growing population. This happens because large amount of groundwater is pumped out in densely populated colonies. This has drastically lowered the water table.
(iii) Large industries also make huge demand on water. Further industrial pollution often pollutes the water bodies which further aggravates the situation.

7. Resistance to these projects (Narmada Bachao Andolan and Tehri Dam Andolan) has primarily been due to the large-scale displacement of local communities. So, if the local people are not benefiting from such projects then who is benefited? With abundance of water many farmers shifting to water intensive and commercial crops. This has great ecological consequences like

salinization of the soil. It has transformed the social landscape i.e. increasing the social gap between the richer landowners and the landless poor.

8. (a) It is true that urbanisation has aggravated water crisis in India. The urban centres support large populations which increases the water demand for personal uses.
(b) In the city, housing societies or colonies have their own groundwater pumping arrangements to meet the water requirements. Thus, the water resources are over- exploited.
(c) The urban centres also have many large numbers of industries. These industries use a huge quantity of water and exert pressure on the existing freshwater resources. Quite often the industries also pollute the water resources.

9. Damming of rivers affect their natural flow causing poor sediment flow and excessive sedimentation at the bottom of the reservoir, and poorer habitat for the rivers' aquatic life. Dams also fragment rivers making it difficult for aquatic fauna to migrate, especially for spawning. Reservoirs created on the floodplains also submerge the
existing vegetation and soil leading to its decomposition.

10. A large amount of this precious water just drains away. The only way to save this water from wastage is by rainwater harvesting. In its simplest form it involves storing the rainwater in tanks, or by making embankments etc. The different methods of rainwater harvesting used in India have been as follows:
(a) Guls or Kuls in the Western Himalayas.
(b) Rooftop rainwater harvesting in Rajasthan associated with tankas. Khadins in Jaisalmer and Johads in other parts of Rajasthan were also popular.
(c) Inundation channels in West Bengal
(d) In Meghalaya which gets copious rain, rainwater harvesting is commonly practiced.
(e) In modern civil construction and housing societies provision for rainwater harvesting.

11. In Meghalaya, a system of tapping stream and spring water by using bamboo pipes is prevalent. This system solved the problem of acute shortage of water, to some extent.

12. Tamil Nadu has made roof top rainwater harvesting structure compulsory to all the houses across the state. This provision helped the state Tamil Nadu to solve the problem of acute shortage of water.

13. After independence, industries are increasing at a rapid pace and have put pressure on existing freshwater resources, freshwater is limited, though renewable. In India, over-exploitation and mismanagement of this resource by industries is aggravating the water stress day-by-day.
(i) Industries especially heavy industries use huge amount of freshwater, they also pollute and waste a large amount of water.
(ii) These industries often depend on hydroelectric projects and this electricity is generated through damming the rivers upstream. So, the river almost dries in the lower stream areas.
(iii) Industries dump the chemical waste in the river, lake, etc. which then consequently pollute the water dangerously. These also contaminate the groundwater through seepage of industrial wastes. So, the increasing number of industries exerts pressure on existing freshwater resources.

14. The reasons for water scarcity in India are:
(i) Seasonal and annual variation in precipitation.
(ii) Unequal access to water resources.
(iii) Over-exploitation of water resources or freshwater bodies.
(iv) Large and growing population resulting in greater demand for water resources particularly in cities.
A large population means, not only more water is required for domestic use but also for higher food grain productivity. This has led to over-exploitation of water resources to expand irrigated areas especially for dry season agriculture. It has also contributed to falling groundwater levels, adversely affecting the water availability and food security of the people.
(v) Multiplying urban areas with dense population and modern lifestyles have created an ever-increasing demand for water and energy resources.
(vi) Pollution of water bodies due to discharge of industrial effluents, use of pesticides, insecticides and fertilizers in agriculture, make the river water hazardous for human consumption.

15. (i) In semi-arid and arid regions of Rajasthan, almost all the houses traditionally had underground tanks for storing drinking water. They are extremely reliable source of drinking water when other sources dry up.

Rainwater is considered as the purest form of natural water.
(ii) The tanks can be as large as big rooms.
(iii) The tanks were parts of the well-developed roof-top rainwater harvesting systems.
(iv) The tanks were built inside the main house or the courtyard giving cooling effect to the rooms in the summer.
(v) Those tanks were connected to the sloping roofs of the houses by a pipe.
(vi) Rain falling on these rooftops would travel down the pipe and get stored in these underground tanks.
(vii) Usually first rainwater is not collected as it cleans the rooftop and the pipe.

16. (i) Rooftop rainwater is collected using a PVC pipe.
(ii) Collected water is filtered using sand and bricks.
(iii) Underground pipe is used to take the water to the tank for immediate usage.
(iv) Excess water from the tank is taken to the well.
(v) Water from the well recharges the underground water.

17. A project where many uses of the impounded water are integrated with one another is known as multipurpose project. It is built for irrigation, power generation, water supply, flood control, recreation, etc.
(a) Bhakra Nangal project
(b) Sardar Sarovar project

18. (i) Bamboo Drip irrigation system is a 200 years old system of tapping stream and spring water by using bamboo pipe and transporting water from higher to lower regions through gravity.
(ii) Features:
(a) 18-20 litres of water enters the bamboo pipe system, get transported over hundreds of metres and finally reduces to 20-80 drops per minute at the site of the plant.
(b) The flow of water into the pipes is controlled by manipulating the pipe positions.

19. Post independence India witnessed intensive industrialisation and urbanisation.
(i) Arrival of MNC's: Apart from freshwater they required electricity which

comes from hydroelectric power.
(ii) Multiplying urban centres with large and dense population and urban lifestyles have only added to water and energy requirements, which has further aggravated the problem.
(iii) Large-scale migration from rural to urban areas is causing over exploitation of water resources.

20. Jawaharlal Nehru proclaimed the dams as the "temples of modern India" because:
(i) They eliminate or reduce flooding.
(ii) They provide water for agriculture.
(iii) They provide water for human and industrial consumption.
(iv) Provide hydroelectricity for houses and industries.

21. The given statement means that most often over exploitation of water resources leads to water scarcity. An important example is growing of crops in dry season with the help of groundwater. This had led to severe depletion of groundwater levels in different parts of the country. Distribution of water in terms of precipitation and availability through other sources is quite uneven. For example annual precipitation in Mawsynram, Meghalaya, is, 11,873 mm while annual rain in Jodhpur Rajasthan is less than 100 mm. The uneven rainfall creates its own problems. Whereas in areas of scarcity people try to save every bit of precipitation, a lot of water in areas of heavy rain goes waste.

22. Advantages:
(i) These are an important source of power generation.
(ii) They provide us pollution free and economical energy which is the backbone of industry and agriculture.
(iii) These projects control the floods because water can be stored in them. These projects have converted many rivers of sorrows into rivers of boon.
(iv) These projects are the main source of irrigation and also help in conserving soil. (Any three) Disadvantages:
(i) Due to the construction of dams there are no adequate floods in the river. Because of this, the soil of the downstream regions does not get nutrient rich silt.
(ii) Dams also fragment rivers making it difficult for aquatic fauna to migrate for spawning.
(iii) It results in displacement of local communities. The local people often

have to given up their land and livelihood and their meagre access and control overresources.

23. (i) Water harvesting system is a viable alternative because it is both socio-economic and environment friendly.
(ii) Rooftop Rainwater Harvesting is the technique through which rainwater is captured from the roof catchments and stored in reservoirs.
(iii) The two methods adopted by ancient India for water conservation are:
(a) In hill and mountainous regions, people built diversion channels like 'guls' or 'kuls' of the western Himalayas for agriculture.
(b) In arid and semi-arid regions, agricultural fields were converted into rainfed storage structures like the 'Khadins' in Jaisalmer and 'Johads' in other parts of Rajasthan.

24. (i) Rooftop rainwater is collected using a PVC pipe.
(ii) Collected water is filtered using sand and bricks.
(iii) Underground pipe is used to take the water to the tank for immediate usage.
(iv) Excess water from the tank is taken to the well.
(v) Water from the well recharges the underground water.

25. (i) The availability of water resources varies over space and time, mainly due to the variations in seasonal and annual precipitation.
(ii) Over-exploitation, excessive use and unequal access
o water among different social groups.
(iii) Water scarcity may be an outcome of large and growing population.
(iv) Expansion of irrigated area for dry-season agriculture.
26. Rooftop water harvesting is important in Rajasthan because:
(i) It provides a good source of drinking water.
(ii) The rainwater can be stored in the tanks till the next rainfall, making it an extremely reliable source of drinking water when all other sources are dried up, particularly in the summers.
(iii) Rainwater, or palar pani, as commonly referred to in these parts, is considered the purest form of natural water.
(iv) Many houses construct underground rooms adjoining the tanks to beat the summer heat as it keeps the room cool.
(v) Some houses still maintain the tanks since they do not like the taste of tap water.

CBSE Sample Questions

1. (i) (a) Irrigation
(c) Drinking water for the drought-prone region. (1)
(ii) (a) Huge displacement of people
(b) Demand for rehabilitation
(c) Harm of harvest
(d) Loss of livelihood (1)
(iii) (a) Against huge displacement of people
(b) Environmental issue
(c) Demand for rehabilitation of tribal
(d) To provide tribal the source of livelihood (2)