

UNIQUE STUDY POINT

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Class: X	Subject: Science	Session: 2025-26
Chapter: 03 - Water Resources	Time: 1½ Hours	Max. Marks: 40

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

SECTION A - Multiple Choice Questions (1 mark each)

- Q1.** What percentage of the Earth's surface is covered with water?
- (a) Half
 - (b) One-third
 - (c) Three-fourths
 - (d) Two-thirds
- Q2.** Which of the following is the main source of freshwater that can be put to use?
- (a) Oceans
 - (b) Surface run off and ground water
 - (c) Glaciers
 - (d) Sea water
- Q3.** Water scarcity in most cases is caused by:
- (a) Low rainfall only
 - (b) Over-exploitation, excessive use and unequal access
 - (c) Climate change only
 - (d) Natural disasters
- Q4.** Which sector is the largest consumer of water in India?
- (a) Domestic use
 - (b) Industrial use
 - (c) Irrigated agriculture
 - (d) Power generation
- Q5.** Jawaharlal Nehru called dams as:

- (a) Pillars of modern India
- (b) Temples of modern India
- (c) Monuments of modern India
- (d) Foundations of modern India

Q6. The Bhakra-Nangal project is built on which river basin?

- (a) Ganga-Yamuna
- (b) Sutlej-Beas
- (c) Krishna-Godavari
- (d) Mahanadi

Q7. Which of the following is NOT a problem caused by multi-purpose dams?

- (a) Displacement of people
- (b) Soil erosion
- (c) Increase in groundwater level
- (d) Earthquake induction

Q8. In Rajasthan, the underground tanks for storing rainwater are called:

- (a) Johads
- (b) Tankas
- (c) Khadins
- (d) Kuls

Q9. Which state in India was the first to make rooftop rainwater harvesting compulsory?

- (a) Kerala
- (b) Tamil Nadu
- (c) Maharashtra
- (d) Karnataka

Q10. The goal of Jal Jeevan Mission is to provide how many litres of water per capita per day?

- (a) 40 litres
- (b) 55 litres
- (c) 70 litres
- (d) 100 litres

SECTION B - Short Answer Questions (2 marks each)

Q11. Explain how water is a renewable resource despite water scarcity in many regions.

Q12. What is meant by water scarcity? Mention any two causes of water scarcity.

Q13. Name any two traditional methods of rainwater harvesting practiced in different parts of India.

Q14. How do multi-purpose river projects help in flood control and irrigation?

SECTION C - Short Answer Questions (3 marks each)

Q15. Describe how post-independent India's industrialization and urbanization has affected water resources.

Q16. Explain the rooftop rainwater harvesting system practiced in Rajasthan with the help of tankas.

Q17. What are the main objectives of Pradhan Mantri Krishi Sinchayee Yojana? Explain any three.

SECTION D - Long Answer Question (5 marks)

Q18. "Multi-purpose projects and large dams have come under great scrutiny and opposition." Justify this statement by explaining various problems associated with multi-purpose river projects.

SECTION E - Case Study Based Questions (4 marks each)

Q19. Read the following case study and answer the questions that follow:

In Gendathur, a remote backward village in Mysuru, Karnataka, villagers have installed rooftop rainwater harvesting systems to meet their water needs. Nearly 200 households have installed this system and the village has earned the rare distinction of being rich in rainwater. Gendathur receives an annual precipitation of 1,000 mm. With 80% collection efficiency and about 10 fillings, every house can collect and use about 50,000 litres of water annually. From the 200 houses, the net amount of rainwater harvested annually amounts to 1,00,000 litres.

- (a) How many households in Gendathur have installed rainwater harvesting systems? (1 mark)
- (b) What is the annual precipitation received by Gendathur? (1 mark)
- (c) How much water can each house collect annually? (1 mark)
- (d) Why is rooftop rainwater harvesting important for villages like Gendathur? (1 mark)

Q20. Read the following case study and answer the questions that follow:

Atal Bhujal Yojana (Atal Jal) is being implemented in 8220 water stressed Gram Panchayats of 229 administrative blocks in 80 districts of seven states - Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh. The selected States account for about 37% of the total number of water-stressed (over-exploited, critical and semi-critical) blocks in India. One of the key aspects of Atal Jal is to bring in behavioural changes in the community, from the prevailing attitude of consumption to conservation and smart water management.

- (a) In how many gram panchayats is Atal Bhujal Yojana being implemented? (1 mark)
- (b) Name any three states where this scheme is being implemented. (1 mark)
- (c) What is the key aspect of Atal Jal regarding community behaviour? (1 mark)
- (d) What percentage of India's water-stressed blocks are covered by these states? (1 mark)

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SECTION A - Answers to MCQs

Ans 1. (c) Three-fourths

Three-fourths of the Earth's surface is covered with water, but only a small proportion accounts for freshwater that can be put to use.

Ans 2. (b) Surface run off and ground water

Freshwater is mainly obtained from surface run off and ground water that is continually being renewed and recharged through the hydrological cycle.

Ans 3. (b) Over-exploitation, excessive use and unequal access

Water scarcity in most cases is caused by over-exploitation, excessive use and unequal access to water among different social groups.

Ans 4. (c) Irrigated agriculture

Irrigated agriculture is the largest consumer of water in India. Water resources are being over-exploited to expand irrigated areas for dry-season agriculture.

Ans 5. (b) Temples of modern India

Jawaharlal Nehru proudly proclaimed the dams as the 'temples of modern India' as they would integrate development of agriculture with rapid industrialization.

Ans 6. (b) Sutlej-Beas

In the Sutlej-Beas river basin, the Bhakra-Nangal project water is being used both for hydel power production and irrigation.

Ans 7. (c) Increase in groundwater level

Multi-purpose dams actually cause problems like displacement of people, soil erosion, and induced earthquakes. They do not increase groundwater levels significantly.

Ans 8. (b) Tankas

In the semi-arid and arid regions of Rajasthan, particularly in Bikaner, Phalodi and Barmer, almost all houses traditionally had underground tanks or tankas for storing drinking water.

Ans 9. (b) Tamil Nadu

Tamil Nadu is the first state in India which has made rooftop rainwater harvesting structure compulsory to all houses across the state with legal provisions to punish defaulters.

Ans 10. (b) 55 litres

The goal of Jal Jeevan Mission is to enable every rural household to get assured supply of potable piped water at a service level of 55 litres per capita per day.

SECTION B - Answers to Short Answer Questions

Ans 11.

Water is a renewable resource because:

- Freshwater is obtained from surface run off and ground water that is continually being renewed and recharged through the hydrological cycle.
- All water moves within the hydrological cycle ensuring that water is a renewable resource, as it continuously circulates through evaporation, precipitation, and collection.

Ans 12.

Water scarcity refers to the shortage of water resources to meet the demands of water usage within a region.

Two causes of water scarcity:

1. **Over-exploitation and excessive use:** Large population requires more water for domestic use and food production, leading to over-exploitation of water resources.
2. **Unequal access to water:** Water scarcity may be an outcome of unequal access to water among different social groups, even when water is available.

Ans 13.

Two traditional methods of rainwater harvesting:

1. **Guls or Kuls:** In hill and mountainous regions, especially in the Western Himalayas, people built diversion channels called 'guls' or 'kuls' for agriculture.
2. **Tankas:** In Rajasthan, rooftop rainwater harvesting was commonly practiced using underground tanks called tankas to store drinking water.

Ans 14.

Multi-purpose river projects help in:

- **Flood control:** Dams regulate the flow of rivers by storing excess water during heavy rains and releasing it gradually, thus controlling floods downstream.
- **Irrigation:** The water stored in reservoirs can be channeled through canals to irrigate agricultural fields during dry seasons, ensuring year-round water supply for crops.

SECTION C - Answers to Short Answer Questions

Ans 15.

Post-independent India's industrialization and urbanization has affected water resources in the following ways:

1. **Intensive industrialization:** The ever-increasing number of industries has made matters worse by exerting pressure on existing freshwater resources. Industries are heavy users of water and also require power to run them, much of which comes from hydroelectric power.
2. **Rapid urbanization:** Multiplying urban centres with large and dense populations have added to water and energy requirements. Urban lifestyles have further aggravated the problem.
3. **Over-exploitation:** Most housing societies and colonies in cities have their own groundwater pumping devices to meet their water needs, causing fragile water resources to be over-exploited and depleted.

Ans 16.

Rooftop rainwater harvesting in Rajasthan using tankas:

1. **Structure:** In semi-arid and arid regions of Rajasthan, almost all houses traditionally had underground tanks or tankas for storing drinking water. The tanks could be as large as a big room.
2. **System:** Tankas were built inside the main house or courtyard and were connected to the sloping roofs through pipes. Rain falling on rooftops would travel down the pipe and be stored in underground tankas.
3. **Collection process:** The first spell of rain was usually not collected as this would clean the roofs and pipes. Rainwater from subsequent showers was then collected and stored till the next rainfall, providing a reliable source of drinking water when other sources dried up.

Ans 17.

Main objectives of Pradhan Mantri Krishi Sinchayee Yojana:

1. **Har Khet Ko Pani (Water to every field):** To enhance physical access of water on the farm and expand cultivable area under assured irrigation, ensuring access to protective irrigation for all agricultural farms.
2. **Per Drop More Crop:** To improve on-farm water use efficiency to reduce wastage and increase water availability both in duration and extent through irrigation and other water-saving technologies.
3. **Sustainable practices:** To introduce sustainable water conservation practices and bring much-desired rural prosperity by ensuring proper water management.

SECTION D - Answer to Long Answer Question

Ans 18.

Multi-purpose projects and large dams have come under great scrutiny and opposition for the following reasons:

1. Environmental Problems:

- **Poor sediment flow:** Regulating and damming of rivers affect their natural flow causing poor sediment flow and excessive sedimentation at the bottom of the reservoir.
- **Poorer habitats:** Sedimentation results in rockier stream beds and poorer habitats for the rivers' aquatic life.
- **River fragmentation:** Dams fragment rivers making it difficult for aquatic fauna to migrate, especially for spawning.
- **Vegetation loss:** Reservoirs created on floodplains submerge existing vegetation and soil leading to decomposition over time.

2. Flood-related Issues:

- Ironically, dams constructed to control floods have triggered floods due to sedimentation in the reservoir.
- Big dams have mostly been unsuccessful in controlling floods at the time of excessive rainfall.
- These floods have devastated life and property and caused extensive soil erosion.

3. Agricultural Impact:

- **Loss of natural fertiliser:** Sedimentation meant that flood plains were deprived of silt, a natural fertiliser, adding to land degradation problems.
- **Changed cropping patterns:** Irrigation has changed cropping patterns with farmers shifting to water-intensive and commercial crops, leading to ecological consequences like salinization of soil.

4. Social Problems:

- Multi-purpose projects lead to large-scale displacements and loss of livelihood for people.

5. Other Problems:

- Induced earthquakes in some regions
- Water-borne diseases and pests
- Pollution resulting from excessive use of water

SECTION E - Answers to Case Study Based Questions

Ans 19.

- (a) Nearly 200 households in Gendathur have installed rainwater harvesting systems.
- (b) Gendathur receives an annual precipitation of 1,000 mm.
- (c) Each house can collect and use about 50,000 litres of water annually.
- (d) Rooftop rainwater harvesting is important for villages like Gendathur because:
- It helps remote and backward villages become self-sufficient in meeting their water needs
 - It provides a sustainable and reliable source of water throughout the year
 - It reduces dependence on external water sources and helps in water conservation

Ans 20.

- (a) Atal Bhujal Yojana is being implemented in 8220 water-stressed Gram Panchayats.
- (b) Three states where the scheme is being implemented are:
1. Gujarat
 2. Rajasthan
 3. Madhya Pradesh
- (Any three from: Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh)
- (c) The key aspect of Atal Jal regarding community behaviour is to bring in behavioural changes from the prevailing attitude of consumption to conservation and smart water management.
- (d) These states account for about 37% of the total number of water-stressed (over-exploited, critical and semi-critical) blocks in India.