NCERT Geography Class 10th Chapter 3:

Water Resources

Water Scarcity And The Need For Water Conservation And Management

Water Scarcity and Its Causes

1. Abundance vs. Scarcity:

- Despite being renewable and abundant, water scarcity is a growing concern.
- Scarcity is often associated with drought-prone regions like Rajasthan.

2. Causes of Water Scarcity:

- **Natural Causes:** Variations in seasonal and annual precipitation.
- **Human Causes:**
  1. Over-exploitation of water resources.
  2. Excessive water use.
  3. Unequal access to water among different social groups.
- **Unequal Access:** Water scarcity may exist even in regions with ample resources due to socio-economic disparities.

Population and Agriculture Impact

1. Role of Population:

- A growing population increases water demand for domestic use and food production.

2. Agricultural Over-Exploitation:

- Irrigated agriculture is the largest consumer of water resources.
- Overuse of wells and tube wells depletes groundwater levels.
- Expansion of irrigated areas for dry-season farming exacerbates water scarcity.

3. Need for Agricultural Innovation:

- Development of drought-resistant crops.
- Adoption of dry farming techniques.

Water Resources

1. Sources of Freshwater:

- Precipitation, surface runoff, and groundwater are key sources.

2. Urban Water Scarcity:

- Many cities face scarcity despite having adequate resources due to overuse and mismanagement.

Adverse Effects of Over-Exploitation

1. Groundwater Depletion:

- Leads to falling water tables.
- Adversely affects water availability and food security.
- Conservation and innovation in water use are essential to ensure sustainable water availability and food security.

Water Scarcity: Causes and Impact

1. Water Scarcity and Urbanization:

- **Post-Independent India:** Industrialization and urbanization have intensified pressure on freshwater resources.
- **Urban Centres:** Housing societies often use groundwater pumping devices, leading to over-exploitation and depletion of water resources in cities.

2. Industrial Impact:

- Industries are heavy water users and depend on hydroelectric power, constituting 22% of India's electricity.
- Industrial waste contributes to water pollution.

3. Agriculture and Pollution:

- Chemicals, pesticides, and fertilizers used in agriculture pollute water.
- Pollution from domestic and industrial waste renders water hazardous for human use.

Qualitative vs. Quantitative Water Scarcity

1. Quantitative Aspect:

- Urban and industrial overuse leads to the depletion of fragile water resources.

2. Qualitative Aspect:

- Water availability may meet needs, but pollution degrades its quality.
- Rivers, including the Ganga and Yamuna, are severely polluted.

Government Initiatives

1. Jal Jeevan Mission (JJM):

- Aims to supply potable piped water (55 litres per capita daily) to every rural household on a long-term basis.
- Focuses on improving the quality of life and enhancing the ease of living in rural areas.

Environmental Concerns

1. Threat to Rivers:

- Smaller rivers are toxic, while major rivers like the Ganga and Yamuna are highly polluted.
- Causes include population growth, urbanization, industrialization, and agricultural modernization.

2. Ecological Crisis:

- Over-exploitation and mismanagement of water resources can lead to ecological crises affecting health, food security, and livelihoods.

Need for Conservation and Management

1. Importance of Conservation:

- Safeguard health, ensure food security, sustain livelihoods, and protect ecosystems.
- Prevent water resource impoverishment and ecological degradation.

2. Urgency of Action:

- Immediate conservation and management of water resources are necessary to mitigate ecological and societal challenges.

MCQ Questions on NCERT Geography Class 10 | Water Scarcity And The Need For Water Conservation And Management

Question 1. What is the primary cause of water scarcity in regions with ample water resources?

a) Seasonal rainfall
b) Over-exploitation and unequal access
c) Lack of dams and reservoirs
d) Poor water conservation techniques

Answer: b) Over-exploitation and unequal access

Question 2. What is the main consumer of water in India?

a) Industries
b) Domestic households
c) Irrigated agriculture
d) Urban centres

Answer: c) Irrigated agriculture

Question 3. Which type of farming technique is suggested to reduce over-exploitation of water?

a) Monocropping
b) Rainwater harvesting
c) Drought-resistant crops and dry farming techniques
d) Organic farming

Answer: c) Drought-resistant crops and dry farming techniques

Question 4. Which of the following contributes to water scarcity despite sufficient water availability?

a) Uneven rainfall
b) Pollution by industrial and domestic wastes
c) Excessive irrigation
d) Urbanisation

Answer: b) Pollution by industrial and domestic wastes

Question 5. What percentage of electricity production in India is contributed by hydroelectric power?

a) 10%
b) 22%
c) 30%
d) 40%

Answer: b) 22%

Question 6. What has post-independence industrialisation in India resulted in?

a) Decreased water scarcity
b) Pressure on freshwater resources
c) Equal distribution of water
d) Increased agricultural yields

Answer: b) Pressure on freshwater resources

Question 7. What has been the effect of urban housing societies on groundwater?

a) Conservation of groundwater
b) Over-exploitation and depletion
c) Improved water recycling
d) Equal access to water

Answer: b) Over-exploitation and depletion

Question 8. What is a potential consequence of farmers using tube wells extensively for irrigation?

a) Increased food security
b) Higher crop yields without any impact
c) Falling groundwater levels
d) Conservation of water resources

Answer: c) Falling groundwater levels

Question 9. What is the goal of the Jal Jeevan Mission (JJM)?

a) To provide irrigation facilities to farmers
b) To ensure piped potable water to rural households
c) To clean rivers like Ganga and Yamuna
d) To reduce urban water wastage

Answer: b) To ensure piped potable water to rural households

Question 10. According to the Jal Jeevan Mission, how much potable water per capita per day is targeted for rural households?

a) 25 litres
b) 50 litres

c) 55 litres
d) 60 litres

Answer: c) 55 litres

Question 11. Which government initiative prioritises improving the quality of life in rural areas through better water management?

a) National Water Policy
b) Jal Jeevan Mission
c) Clean Ganga Project
d) Save Water Programme

Answer: b) Jal Jeevan Mission

Question 12. What is the primary reason for India's rivers turning into toxic streams?

a) Over-irrigation
b) Population growth and urbanisation
c) Seasonal droughts
d) Dam construction

Answer: b) Population growth and urbanisation

Question 13. Which rivers in India are particularly highlighted as being far from pure?

a) Brahmaputra and Godavari
b) Ganga and Yamuna
c) Narmada and Tapi
d) Cauvery and Krishna

Answer: b) Ganga and Yamuna

Question 14. What are the main pollutants of water bodies in India?

a) Rainwater and organic matter
b) Industrial waste, domestic waste, and agricultural chemicals
c) Aquatic plants
d) Salt deposits

Answer: b) Industrial waste, domestic waste, and agricultural chemicals

Question 15. Why is it essential to conserve and manage water resources?

a) To increase urbanisation
b) To ensure food security and prevent ecological crises
c) To facilitate industrial growth
d) To support population migration

Answer: b) To ensure food security and prevent ecological crises

Question 16. What is a major consequence of over-exploitation and mismanagement of water resources?

a) Decrease in population
b) Increase in biodiversity
c) Ecological crisis with profound impacts
d) Higher energy production

Answer: c) Ecological crisis with profound impacts

Question 17. Which of the following is NOT a suggested way to conserve water resources?

a) Managing water pollution
b) Using water-efficient irrigation techniques
c) Overdrawing groundwater for industrial use
d) Developing drought-resistant crops

Answer: c) Overdrawing groundwater for industrial use

Question 18. Which Indian state experienced life disruption due to a record 180 mm rainfall overnight, as mentioned in the content?

a) Chennai
b) Kolkata
c) Mumbai
d) Bengaluru

Answer: b) Kolkata

Question 19. What is the key reason for water shortages in cities despite sufficient rainfall?

a) Lack of rainwater harvesting
b) Unequal access and pollution of water resources
c) Excess agricultural usage
d) Migration to rural areas

Answer: b) Unequal access and pollution of water resources

Question 20. What is one of the significant causes of falling groundwater levels in India?

a) Increased rainfall
b) Over-reliance on tube-well irrigation
c) Urban water recycling
d) Construction of new dams

Answer: b) Over-reliance on tube-well irrigation

Multi-Purpose River Projects And Integrated Water Resources Management

Water Conservation: Historical Perspective

1. Ancient Hydraulic Structures:

- Sringaverapura (1st century B.C.): Sophisticated water harvesting system to channel Ganga floodwaters.
- **Mauryan Period:** Construction of dams, lakes, and irrigation systems.
- **Notable Ancient Sites:**
  a. Kalinga (Odisha), Nagarjunakonda (Andhra Pradesh), Bennur (Karnataka), Kolhapur (Maharashtra).
  b. Bhopal Lake: Built in the 11th century, it is one of the largest artificial lakes.
  c. Hauz Khas (14th century): Constructed by Iltutmish for Siri Fort's water supply.

Modern Water Conservation: Dams and Multi-Purpose Projects

1. Functions of Dams:

- Traditionally used to impound rivers and rainwater for irrigation.
- Modern uses: Hydroelectric power, water supply, flood control, recreation, inland navigation, fish breeding.

2. Multi-Purpose Projects:

- **Bhakra-Nangal (Sutluj-Beas basin):** Irrigation and hydel power.
- **Hirakud (Mahanadi basin):** Water conservation and flood control.

3. Dams Classification:

- **By Structure:** Timber, embankment, masonry dams (with subtypes).
- **By Height:** Low, medium, high dams; large and major dams.

4. Post-Independence Development:

- Multi-purpose projects aimed to integrate agricultural and industrial development.
- Jawaharlal Nehru called dams the "*temples of modern India*."

Environmental and Social Issues

1. Environmental Concerns:

- **Natural Flow:** Damming causes poor sediment flow, excessive sedimentation, and rocky stream beds.
- **Aquatic Life:** Habitat disruption and migration difficulties for fauna.
- **Floodplain Submergence:** Leads to vegetation and soil decomposition.
- **Soil Salinisation:** Water-intensive agriculture affects soil fertility.

2. Social Issues:

- **Displacement:** Large-scale displacement of local communities for dam projects.
- **Beneficiaries:** Primarily landowners, industrialists, and urban centres, while the landless and poor are neglected.
- **Movements:**
  a. Narmada Bachao Andolan: Opposed Sardar Sarovar Dam; demanded full rehabilitation for displaced communities.
  b. Tehri Dam Andolan: Resisted displacement and ecological harm.

3. Inter-State Water Disputes:

- **Sabarmati Basin:** Conflicts over water allocation between farmers and urban centres during droughts.
- **Krishna-Godavari Dispute:** Karnataka and Andhra Pradesh opposed Maharashtra's Koyna project for reducing downstream water flow.

Failures of Multi-Purpose Projects

1. Flood Aggravation:

- Sedimentation in reservoirs reduced flood control efficiency.
- Release of water during heavy rains worsened floods (e.g., 2006 floods in Maharashtra and Gujarat).

2. Land Degradation:

- Floodplains are deprived of silt, a natural fertiliser, leading to land degradation.

3. Other Failures:

- Triggered earthquakes.
- Increased waterborne diseases, pests, and pollution due to excessive water use.

Key Learnings and Conservation Needs

1. Lessons from Damodar River:

- ***"River of Sorrow":*** Flooding and sedimentation adversely impacted communities (depicted in Bhadu songs).

2. Call for Sustainable Practices:

- Need for balancing development with environmental and social well-being.
- Promote equitable sharing of water resources to prevent conflicts.

MCQ Questions on NCERT Geography Class 10 Chapter 3 | Multi-Purpose River Projects And Integrated Water Resources Management

Question 1. Which ancient site near Allahabad had a sophisticated water harvesting system in the first century B.C.?

a) Nagarjunakonda
b) Sringaverapura
c) Hauz Khas
d) Kalinga

Answer: b) Sringaverapura

Question 2. During whose reign were dams, lakes, and irrigation systems extensively built?

a) Ashoka
b) Chandragupta Maurya
c) Akbar
d) Iltutmish

Answer: b) Chandragupta Maurya

Question 3. The Hauz Khas tank in Delhi was constructed by which ruler?

a) Alauddin Khilji
b) Iltutmish
c) Babur
d) Shah Jahan

Answer: b) Iltutmish

Question 4. Which 11th-century lake is considered one of the largest artificial lakes of its time?

a) Sambhar Lake
b) Bhopal Lake
c) Dal Lake
d) Pulicat Lake

Answer: b) Bhopal Lake

Question 5. What are dams primarily used for in modern times?

a) Flood control
b) Hydroelectric power generation
c) Irrigation and water supply
d) All of the above

Answer: d) All of the above

Question 6. What is a spillway in the context of dams?

a) A section for sedimentation
b) A barrier to stop water flow
c) A section where water flows intermittently or continuously
d) A channel for irrigation

Answer: c) A section where water flows intermittently or continuously

Question 7. Which multi-purpose project integrates hydel power production with irrigation in the Sutlej-Beas basin?

a) Hirakud Project
b) Bhakra-Nangal Project
c) Sardar Sarovar Project
d) Damodar Valley Project

Answer: b) Bhakra-Nangal Project

Question 8. What is the primary classification of dams based on their structure?

a) Timber, embankment, masonry dams
b) Small, medium, large dams
c) Concrete, steel, stone dams
d) Irrigation, hydroelectric, flood-control dams

Answer: a) Timber, embankment, masonry dams

Question 9. What is one major ecological consequence of irrigation from dams?

a) Increased agricultural productivity
b) Soil salinisation
c) Reduction in urban water supply
d) Increased rainfall in the region

Answer: b) Soil salinisation

Question 10. Which river is called the 'River of Sorrow' in the Damodar Valley?

a) Narmada
b) Mahanadi
c) Damodar
d) Krishna

Answer: c) Damodar

Question 11. What was the primary focus of the Narmada Bachao Andolan initially?

a) Displacement of people
b) Environmental issues related to submerging trees
c) Opposition to electricity generation
d) Protests against taxation policies

Answer: b) Environmental issues related to submerging trees

Question 12. Which of the following is NOT an issue caused by dams?

a) Induced earthquakes
b) Increased siltation in floodplains
c) Enhanced migration of aquatic fauna
d) Submergence of vegetation and soil

Answer: c) Enhanced migration of aquatic fauna

Question 13. What is a common social consequence of dam construction?

a) Reduction in poverty
b) Displacement of local communities
c) Increased employment opportunities
d) Equal distribution of resources

Answer: b) Displacement of local communities

Question 14. Which states are part of the Sardar Sarovar project?

a) Maharashtra, Madhya Pradesh, Gujarat, Rajasthan
b) Karnataka, Andhra Pradesh, Telangana, Tamil Nadu
c) Punjab, Haryana, Himachal Pradesh, Uttarakhand
d) Odisha, West Bengal, Chhattisgarh, Jharkhand

Answer: a) Maharashtra, Madhya Pradesh, Gujarat, Rajasthan

Question 15. The Krishna-Godavari water dispute involves which states?

a) Maharashtra, Karnataka, Andhra Pradesh
b) Gujarat, Rajasthan, Haryana
c) Odisha, West Bengal, Bihar
d) Kerala, Tamil Nadu, Karnataka

Answer: a) Maharashtra, Karnataka, Andhra Pradesh

Question 16. Which of the following groups primarily benefits from multi-purpose projects?

a) Landless farmers
b) Urban centres and industrialists
c) Marginalised tribal communities
d) Small-scale fishermen

Answer: b) Urban centres and industrialists

Question 17. What is a common failure of dams during excessive rainfall?

a) Enhanced power generation
b) Control of floods
c) Triggering floods due to sedimentation
d) Increase in agricultural land

Answer: c) Triggering floods due to sedimentation

Question 18. Which environmental movement opposed the Sardar Sarovar Dam?

a) Chipko Movement
b) Silent Valley Movement
c) Narmada Bachao Andolan
d) Save the Western Ghats Movement

Answer: c) Narmada Bachao Andolan

Question 19. What term did Jawaharlal Nehru use to describe dams in India?

a) Pillars of Progress
b) Engines of Development
c) Temples of Modern India
d) Guardians of Agriculture

Answer: c) Temples of Modern India

Question 20. What natural fertiliser is often deprived of floodplains due to dam sedimentation?

a) Compost
b) Silt
c) Nitrogen
d) Phosphate

Answer: b) Silt

Rainwater Harvesting

FLOODS

Basic Safety Precautions To Be Taken :

- Listen to radio/TV for the latest weather bulletins and flood warnings. Pass on the information to others.
- Make a family emergency kit which should include; a portable radio/transistor, torch, spare batteries, a first aid box along with essential medicines, ORS, dry food items, drinking water, matchboxes, candles and other essential items.
- Keep hurricane lamp, ropes, rubber tubes, umbrella and bamboo stick in your house. These could be useful.
- Keep your cash, jewellery, valuables, important documents etc. in a safe place.
- If there is a flood, move along with your family members and cattle to safe areas like relief camps, evacuation centres, elevated grounds where you can take shelter.
- Turn off power and gas connections before leaving your house.

During floods

- Don't enter into flood waters; it could be dangerous.
- Don't allow children to play in or near flood waters.
- Stay away from sewerage line, gutters, drains, culverts etc.
- Be careful of snakes; snakebites are common during floods.
- Stay away from electric poles and fallen power-lines to avoid electrocution.
- Don't use wet electrical appliances - get them checked before use.
- Eat freshly cooked and dry food. Always keep your food covered.
- Use boiled and filtered drinking water.
- Keep all drains, gutters near your house clean.
- Stagnation of water can breed vector/water-borne diseases .In case of sickness, seek medical assistance.
- Use bleaching powder and lime to disinfect the surroundings.

THE RIDE OF HIS LIFE

Heavy rain drowns Kolkata

Durga Puja Preparations Go Awry As Met Predicts Downpour For Next 2 Days

Collect information about flood prone areas of the country

Ancient Water Harvesting Practices in India

1. Knowledge of Local Ecology:

- Ancient Indians developed techniques based on rainfall regimes, soil types, and ecological conditions.

2. Regional Techniques:

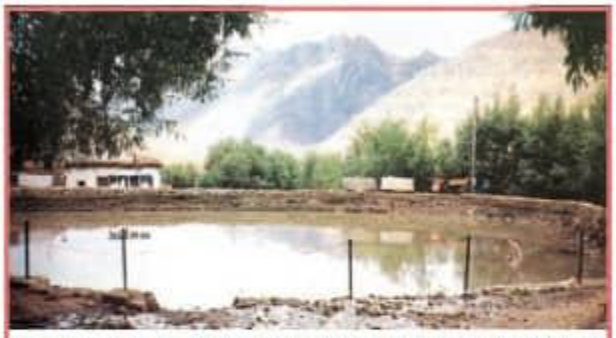
- **Western Himalayas:** Diversion channels like *guls* or *kuls* for agriculture.

- **Rajasthan:** Rooftop rainwater harvesting and rain-fed storage structures like *khadins* (Jaisalmer) and *johads*.
- **Bengal:** Inundation channels for irrigation in floodplains.

3. Arid and Semi-Arid Rajasthan:

- **Tankas in Bikaner, Phalodi, and Barmer:**
  a. Underground tanks connected to sloping roofs via pipes.
  b. Rainwater collected after the first spell cleans the roof and pipes.
  c. Stored water (*palar pani*) remains reliable during summer.

Modern Rooftop Rainwater Harvesting



A kul leads to a circular village tank, as the above in the Kaza village, from which water is released as and when required.

Fig 3.5: Traditional method of rainwater harvesting

1. Rooftop Rainwater Harvesting System (Steps):

- Water is collected using PVC pipes.
- Filtered using sand and bricks.
- Stored in an underground sump for immediate use; excess water recharges wells.
- Water was retrieved from wells later.

2. Advantages of Tankas:

- Provide cool underground rooms in summer.
- Reliable water source when other sources dry up.

Case Study: Gendathur Village, Mysuru

1. Rainwater Harvesting in Gendathur:

- About 200 households installed rooftop rainwater harvesting systems.
- Village receives 1,000 mm annual precipitation; 80% collection efficiency.
- Each house collects around 50,000 litres of water annually.
- Total rainwater harvested annually: 1,00,000 litres.

Changing Trends in Rajasthan

1. Decline of Rooftop Rainwater Harvesting:

- Water is available through the Indira Gandhi Canal.
- Some households still maintain *tankas* due to a preference for rainwater over tap water.

Significance or Benefits of Rainwater Harvesting

1. Benefits of Rainwater Harvesting:

- A socio-economically and environmentally viable alternative to large dams.
- Reduces dependence on external water sources.
- Ensures water availability during dry seasons.

2. Adaptation in Modern India:

- Rooftop rainwater harvesting is gaining popularity in rural and urban areas for water conservation.

Bamboo Drip Irrigation System in Meghalaya

1. Historical Significance:

- A 200-year-old traditional system of water management in Meghalaya.

2. Material Used:

- Bamboo pipes are utilized to transport and distribute water.

3. Source of Water:

- Taps stream and spring water from hilltops.

4. Efficiency of Water Flow:

- About 18-20 litres of water enter the system and are reduced to 20-80 drops per minute at the plant site.

5. Mechanism:

- **Gravity-Based System:** Water flows from higher altitudes to lower reaches due to gravity.
- **Controlled Flow:** Pipe positions are manipulated to regulate water flow.

6. Channel Design:

- Channel sections made of bamboo divert water to plant sites.
- Branch pipes, also made of bamboo, further distribute water.

7. Crossing Roads:

- Bamboo pipes are elevated above roads to maintain the flow of water.

8. Final Application:

- Reduced channel sections and diversion units ensure water is dropped near plant roots, minimizing wastage.

9. Eco-Friendly System:

- Sustainable and environment-friendly method using locally available materials.

10. Importance for Agriculture:

- Ensures efficient water delivery to plants in hilly terrains.

Visual Representation

1. Picture Highlights:

- Bamboo pipes divert water from springs.
- Reduced channels distribute water precisely to roots.
- Elevated pipes crossroads, ensuring uninterrupted water flow.

Interesting Facts:

Rooftop Rainwater Harvesting in Shillong

1. Prevalence:

- Most common water conservation practice in Shillong, Meghalaya.
- Nearly every household in Shillong has a rooftop rainwater harvesting structure.

2. Significance of Rainfall in the Region:

- Shillong faces acute water shortage despite being close to Cherrapunji and Mawsynram, the areas receiving the highest rainfall in the world (55 km away).

3. Contribution to Water Requirements:

- Rooftop rainwater harvesting meets 15–25% of the total water needs of households in Shillong.

4. Geographic Contrast:

- Highlights the paradox of water scarcity in high-rainfall regions due to uneven distribution and lack of proper management.

5. Relevance of Practice:

- Emphasizes the importance of localized solutions like rainwater harvesting to address water shortages effectively.

Rooftop Rainwater Harvesting in Tamil Nadu

1. Pioneering Initiative:

- Tamil Nadu is the first state in India to make rooftop rainwater harvesting structures mandatory for all houses.

2. Legal Framework:

- Legal provisions have been established to penalize defaulters who do not comply with this mandate.

3. Statewide Implementation:

- The initiative applies uniformly across the state, ensuring widespread adoption.

4. Objective:

- Aimed at conserving water and addressing water scarcity issues in the state.

5. Impact:

- Tamil Nadu has set an example for other states in implementing water conservation measures effectively.

6. Enforcement:

- Strong legal enforcement ensures adherence to the rule and promotes awareness about water conservation.

MCQ Questions on NCERT Geography Class 10 Chapter 3 | Rainwater Harvesting

Question 1. What was the main purpose of rooftop rainwater harvesting in Rajasthan?

a) Industrial use
b) Irrigation
c) Storing drinking water
d) Generating electricity

Answer: c) Storing drinking water

Question 2. What are 'guls' or 'kuls,' and where were they built?

a) Underground tanks in Rajasthan
b) Diversion channels in the Western Himalayas
c) Rainfed storage structures in Jaisalmer
d) Irrigation channels in Bengal

Answer: b) Diversion channels in the Western Himalayas

Question 3. Which region in Rajasthan is known for using 'khadins' for water storage?

a) Jaipur
b) Jaisalmer
c) Udaipur
d) Bikaner

Answer: b) Jaisalmer

Question 4. Which method was commonly used in Bengal's floodplains for irrigation?

a) Underground tanks
b) Bamboo drip irrigation
c) Inundation channels
d) Rooftop harvesting

Answer: c) Inundation channels

Question 5. What is the traditional term for rainwater in Rajasthan, considered the purest form of natural water?

a) Palar pani
b) Johad pani
c) Jal paani
d) Khadin pani

Answer: a) Palar pani

Question 6. Which state in India was the first to make rooftop rainwater harvesting compulsory?

a) Karnataka
b) Rajasthan
c) Tamil Nadu
d) Meghalaya

Answer: c) Tamil Nadu

Question 7. What percentage of water requirements are met by rooftop rainwater harvesting in Shillong?

a) 10-15%
b) 15-25%
c) 25-35%
d) 35-50%

Answer: b) 15-25%

Question 8. Which village in Karnataka earned recognition for its successful rainwater harvesting system?

a) Phalodi
b) Gendathur
c) Barmer
d) Mysuru

Answer: b) Gendathur

Question 9. How much rainwater can each household in Gendathur collect annually?

a) 10,000 litres
b) 20,000 litres
c) 50,000 litres
d) 1,00,000 litres

Answer: c) 50,000 litres

Question 10. What has led to a decline in rooftop rainwater harvesting in western Rajasthan?

a) Water scarcity
b) Lack of rainfall
c) Availability of Indira Gandhi Canal water
d) Urbanisation

Answer: c) Availability of Indira Gandhi Canal water

Question 11. Where is the bamboo drip irrigation system predominantly used?

a) Rajasthan
b) Meghalaya

c) Gujarat
d) Tamil Nadu

Answer: b) Meghalaya

Question 12. What is the approximate water flow rate at the plant site in the bamboo drip irrigation system?

a) 10-30 drops per minute
b) 20-80 drops per minute
c) 100-200 drops per minute
d) 500-1000 drops per minute

Answer: b) 20-80 drops per minute

Question 13. What material is used to construct the irrigation channels in the bamboo drip system?

a) Steel
b) Wood
c) Bamboo
d) Plastic

Answer: c) Bamboo

Question 14. What is the purpose of manipulating bamboo pipe positions in the bamboo drip irrigation system?

a) To enhance the water pressure
b) To control the flow of water
c) To increase the water temperature
d) To purify the water

Answer: b) To control the flow of water

Question 15. What is the key feature of bamboo drip irrigation when passing roads or elevated areas?

a) Pipes are buried underground
b) Pipes are taken high above the land
c) Pipes are diverted to alternative channels
d) Pipes are reinforced with steel structures

Answer: b) Pipes are taken high above the land

Question 16. Why do some houses in western Rajasthan still maintain underground tankas?

a) They prefer the taste of stored rainwater over tap water.
b) It is legally mandated.
c) Tankas are easier to maintain than canals.
d) Tankas are used for irrigation purposes.

Answer: a) They prefer the taste of stored rainwater over tap water.

Question 17. Which area receives the highest rainfall but faces acute water shortage, making rainwater harvesting crucial?

a) Shillong
b) Jaisalmer
c) Gendathur
d) Chennai

Answer: a) Shillong

Question 18. What role does rainwater harvesting play in conserving water?

a) Reduces dependence on groundwater
b) Prevents soil erosion
c) Purifies water naturally
d) Reduces urban flooding

Answer: a) Reduces dependence on groundwater

Question 19. How does bamboo drip irrigation ensure efficiency in water delivery?

a) It increases the speed of water flow.
b) It reduces wastage by delivering water directly to the roots.
c) It uses mechanical pumps for pressure.
d) It combines water with fertilisers.

Answer: b) It reduces wastage by delivering water directly to the roots.

Question 20. What is the annual precipitation in Gendathur, Karnataka?

a) 500 mm
b) 750 mm
c) 1,000 mm
d) 1,500 mm

Answer: c) 1,000 mm

Question 21. What is rainwater harvesting?

a) Collecting and storing rainwater for irrigation and domestic use.
b) Channelling rainwater to rivers and seas to avoid flooding.
c) Using rainwater to generate electricity.
d) Stopping rainwater from seeping into the ground.

Answer: c) Collecting and storing rainwater for irrigation and domestic use.

Thank You 😍