Chapter-3
Water Resources

1 marks Questions

1. What is Palar Pani?

Ans. Rain water

2. How much percentage of global precipitation is received by India?

Ans. 4%

3. Which was the largest artificial lake of ancient India built in the 11th century?

Ans. Bhopal Lake

4. Name the hydraulic structure constructed by Iltutmish in the 14th century for supplying water to Siri Fort areas?

Ans. Tank in Hauz Khas, Delhi

5. Name the oldest water-harvesting system channeling the flood water of river Ganga.

Ans. Sringaverapura near Allahabad

6. Name the areas where farmers agitated when higher priority was given to water supply in urban areas, particularly during drought?

Ans. Koyna basin, Uttar Pradesh

7. The Governments of which states raised the Krishna Godavari dispute?

Ans. Karnataka and Andhra Pradesh

8. Name the river on which the Tilaiya, Panchet, Mithon, Konar and Bokaro dams located?

Ans. River Damodar

9. Name the river on which the Koyna and Nagarjuna Sagar dams are located?

Ans. Krishna River

10. Name the river on which the Gandhi Sagar, Rana Partap Sagar and Kota Barage dams are located?

Ans. Chambal River

11. When water stress occurs, according to Falken Mark?

Ans. According to Falken Mark, a Swedish expert, water stress occurs when water availability is less than 1000 cubic meters per person per day.

12. In which sate the bamboo-drip irrigation system is prevalent?

Ans. Meghalaya

13. Which are the two sources of fresh water in India?

Ans. Rivers and ground water

14. Name the region of India which suffers from water scarcity?

Ans. States like Rajasthan, Punjab, Haryana and Western Maharashtra

15. Which river is known as “River of Sorrow” in Jharkhand and West Bengal?

Ans. Damodar River

16. Name the two types of dams based on structure and material used.

Ans. Timber Dams, embankment dams or masonry dams.

17. Name the tributary of river Krishna on which there is a multipurpose project.

Ans. Tungabhadra

18. What percent of the total volume of world's water is estimated to exist as oceans?

Ans. 96.5%

19. What is river basin?

Ans. It is the area which is drained by a single river system. It is also called drainage basin.

20. What do you mean by water divide?

Ans. The uplands that separates two drainage basins is called the water divide.

3 marks Questions

1. Why dams are now referred as multipurpose projects?

Ans. a. Dams are now referred to as multipurpose projects as the uses of the impounded water are in integration with one another.
b. Dams are constructed to flood control, irrigation, generation and distribution of electricity.
c. Dams are constructed to conserve water, vegetation and soil.
d. It also helps to promote tourism.

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2. Highlight the reverse effects of dams on aquatic life and vegetation.

Ans. a. Regulating and damming of rivers affect the natural flow of rivers, causing poor sediment flow and excessive sedimentation at the bottom of the reservoir, resulting in rockier stream beds and poorer habitats for the rivers' aquatic life.
b. Dams also fragment rivers making it difficult for aquatic fauna to migrate, especially for spawning.
c. The reservoirs that are created on the flood plains also submerge the existing vegetation and soil leading to its decomposition over a period of time.

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3. Mention the negative effect of over irrigation?

Ans. a. This has great ecological consequences like Stalinization of the soil.
b. Decrease the soil fertility.
c. It leads to water scarcity.

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4. How can irrigation transform the social landscape?

Ans. a. Irrigation has also changed the cropping pattern of many regions with farmerd

shifting to water intensive and commercial crops.
b. This has great ecological consequences like Stalinization of the soil.
c. At the same time, it has transformed the social gap between the richer land owner and the landless poor farmers.

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5. How dams are responsible for creating conflicts between people of same society? Explain with example.

Ans. a. The dams did create conflicts between people wanting different uses and benefits from the same water resources.
b. In Gujarat, the Sabarmati-basin farmers were agitated and almost caused a riot over the higher priority given to water supply in urban areas, particularly during droughts.

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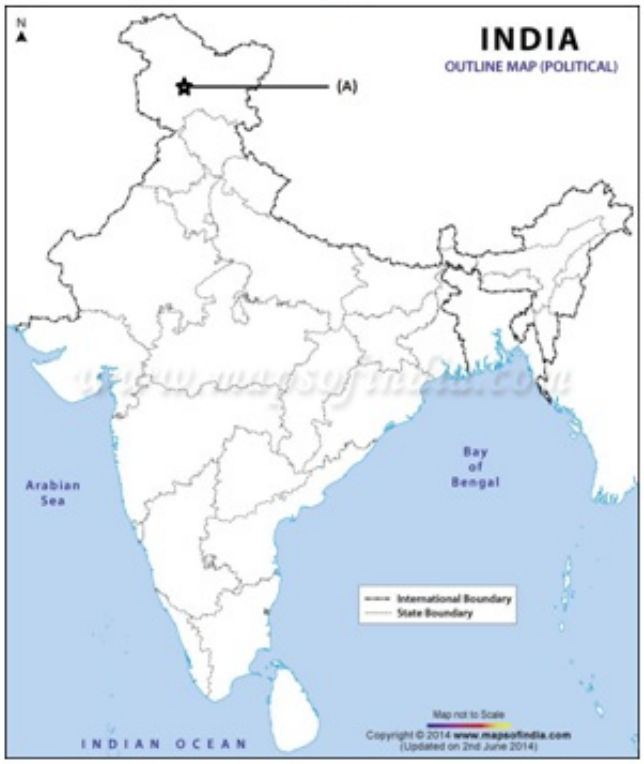
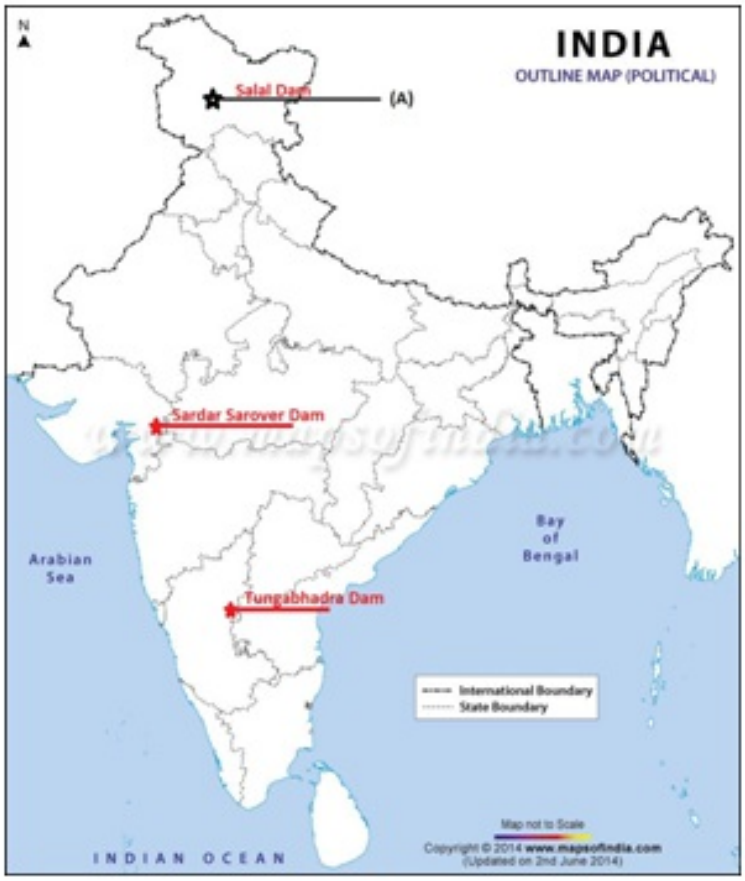
6. Features A is marked in the given political map of India. Identify this feature with the help of the following information and write their correct name on the line marked on the map. 1. A Dam
B. on the same map of India locate and label the following items with appropriate symbols: 1. A Dam on River Narmada 2. A Dam on River Tungabhadra



Ans.



7. Explain the quantitative aspects of water scarcity.

Ans. a. 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.
b. 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.

8. Highlight the facts given by The Citizens' Fifth Report, CSE, 1999.

Ans. a. India's rivers, especially the smaller ones, have all turned into toxic streams.
b. And even the big ones like the Ganga and Yamuna are far from being pure.
c. The assault on India's rivers-from population growth, agricultural modernization, urbanization and industrialization-is enormous and growing day by day.
d. This entire life stands threatened.

9. What do you know about Krishna Godavari Dispute?

Ans. a. The Krishna Godavari dispute is based on the objections raised by the Governments of Karnataka and Andhra Pradesh.
b. The reason is diversion of more water flow at Koyna by the Maharashtra Government for irrigation and a hydro electricity project.
c. It was felt that this would lessen the flow in their states which would have adverse affects on industry and agriculture.

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10. What is rain water harvesting? State the objectives of rainwater harvesting.

Ans. a. Rain water harvesting as a method of utilizing rainwater for domestic and agriculture use is already widely used throughout the world.
b. It has become a widely accepted technique of providing potable water in development projects all over the world.
c. Rain water harvesting is done for storing rainwater in containers above or below the ground.
d. Rainwater harvesting is done for charging into soil for withdrawal later.

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11. What are benefits of rainwater harvesting?

Ans. a. Rainwater harvesting increases water availability.
b. It checks the declining water table.
c. It is environment friendly.
d. Rainwater harvesting improves the quality of groundwater through the dilution of fluoride, nitrate and salinity.
e. Prevent soil erosion and flooding especially in urban areas.

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12. Explain any three human values to reduce water wastage.

Ans. a. The Public should be made aware about the water scarcity and causes of shortage of water.
b. People should use water wisely and in a planned way.
c. Over irrigation should be stopped.

d. The habit of conserving water needs to be developed among the people.

13. What can be the effects of over-exploitation and excessive use of water resources?

Ans. a. Deletion of water resources.
b. Degradation of our natural ecosystem.
c. Shortage of availability of food which may adversely affect food security in the country.
Serious health hazards

14. Describe the qualitative aspect of water scarcity.

Ans. According to qualitative aspects of water scarcity, it is a situation where water 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.

15. Why are dames now referred to as multi-purpose projects?

Ans. Today dams are built not just for irrigation but for electricity generation, water supply for domestic and industrial use, flood control, recreation, inland navigation and fish breeding. Hence, dams are now referred to as multipurpose projects where the many uses of the impounded water are integrated with one another. For example, in the Sutlej-Beas river basin, the Bhakra- Nangal project water is being used both for hydel power production and irrigation. Similarly, the Hirakud project in the Mahanadi basin integrates conservation of water with flood control.

16. What are the difference between traditional dams and multi-purpose projects?

Ans. a. Traditional dams were built to impound rivers and rainwater that could be used later to irrigate agricultural fields only but now multipurpose projects are built not just for irrigation.
b. But for electricity generation, water supply for domestic and industrial use, flood control,

recreation, inland navigation and fish breeding.
c. Hence, dams are now referred to a multiple river projects where the many uses of the impounded water are integrated with one another.

17. How were the understand 'Tankas' beneficial to the people of Rajasthan?

Ans. a. The underground tankas were able to provide reliable sources of drinking water during summer when other sources had dried up.
b. The rainwater or palar pani was considered to be purest form of water.
c. They would help in keeping the room cool to manage the hot summer.

18. Why is rooftop rainwater harvesting the most common practice in Shilong in spite of the fact that Cherapunjee and Mawsynram are situated only at a distance of 55 kilometers from there? Explain

Ans. a. Shillong receives heavy rainfall during monsoon period but the state faces acute water shortage.
b. Once chirrapunji was famous because it received the highest rainfall in world. Today this area faces an acute water shortage. This is a consequence of extensive deforestation and no efforts toward rainwater harvesting
c. It is mainly due to lack of water storage system.
d. Nearly every household in the city has a rooftop rain water harvesting structure.
e. Nearly 15-25 percent of the total water requirement of the household comes from roof top water harvesting.

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

Ans. a. Population is increasing day by day. A large population means more water is required not only for domestic purpose but for agricultural purpose.
b. Industries are the heavy users of fresh water for power which put tremendous pressure on water resources.
c. In cities or housing colonies, they have their own groundwater pumping devices to meet their needs resulting in over exploitation of water resources.

20. What is the importance of water as a natural resource?

Ans. a. It is essential for life.
b. It is essential for domestic consumption.
c. Agriculture is possible only due to water.
d. In is a source of hydraulic energy.
Indispensable for disposal of sewage

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21. Suggest some ways to conserve water resources.

Ans. a. Creation of more water storage.
b. Awareness should be spread about reasons of water scarcity.
c. Development of rainwater harvesting techniques and watershed developments.
d. Over irrigation should be stopped.
e. Setting up of more and more recycling of water plants.

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22. How do the dams create conflicts between the people?

Ans. a. The dams have created conflicts between people wanting different uses and benefits from the same water resources.
b. Inter-state water disputes are becoming common with regard to sharing the costs and benefits of the projects.
c. The landowners, the rich farmers. Industrialists and urban centers are benefitting at the cost of local communities.

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23. “Multipurpose projects have failed to achieve the purpose for which they were built”. Justify by giving reasons.

Ans. a. These dams were constructed to control floods but sometimes they are unable to control floods.
b. Regulating and damming of rivers affect the natural flow of rivers causing poor sediment flow and excessive sedimentation at the bottom of the reservoir.
c. Dams also create conflict between the states and people, wanting different uses and benefits from the same water resources.

24. Why is groundwater a highly overused resource?

Ans. a. Farmers dependent on groundwater to raise their crops.
b. Maximum people of the world are dependent on groundwater for drinking purpose and other house hold purpose because according to them this water is fresh and clean.
c. Due to urbanization and industrialization maximum groundwater is used.

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25. Why are multipurpose projects called as the temples of modern world?

Ans. Jawaharlal Nehru proudly proclaimed the dams as the 'Temples of the modern India' due to the following reasons:
a. It would integrate development of agriculture and the village economy with rapid industrialization and growth of the urban economy.
b. They not only help in irrigation but also help in electricity generation, water supply for domestic and industrial uses, flood control, recreation, inland navigation and fish breeding.

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26. Why is the scarcity of water increasing day by day in India?

Ans. a. Rapid growth of population.
b. Rising area under agriculture and rise in the demand of food and cash crops.
c. Water resources are being exploited to expand irrigated areas in dry seasons.
Due to industrialization

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27. Why should we conserve and manage our water resources?

Ans. a. To maintain the water cycle.
b. To overcome the problem of water scarcity.
c. To stop the excessive use, overutilization and unequal access to water among different social groups.
d. Variation in seasonal and annual precipitation may affect the availability of water over time and space so there is a need of water management.

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28. How can we control over exploitation and mismanagement of water resources?

Ans. a. Conservation and management of water resources is a combined effort-each one of

us contributing towards it positively.
b. Multipurpose river projects should be created by the government to stop the flowing water.
c. Awareness should be spread among the people regarding water management and conservation.

29. State any three points that should be kept in mind before the construction of Dams?

Ans. a. While the construction of dams environment issues, displacement of people should be keep in mind.
b. Distribution of water in between the states should be judicial, while constructing dams.
c. More benefits of dams should be given to the local people whose life gets affected due to the construction of dam.

30. Why is there a need to conserve and manage our water resources?

Ans. a. Because water is essential for life, that's why there is need to conserve water resources.
b. To ensure food security, that's why there is need to conserve water resources.
c. For continuation of our livelihood and productive activities, that's why there is need to conserve water resources.
d. To safeguard ourselves from health hazard that's why there is need to conserve water resources.

5 marks Questions

1. Water is available in abundance in India ever then scarcity of water is experienced in major parts of the country. Explain.

Ans. a. India receives 114 cm rainfall annually and it is far less than Israel, which receives only 25 cm rainfall annually.
b. Israel does not face the problem of water scarcity, but our country is facing this problem every year. The reason is that we are unable to manage and conserve rainwater.
c. The availability of water resources varies over space and time, mainly due to the variations in seasonal and annual precipitation, but water scarcity is most cases is caused by over exploitation, excessive use and unequal access to water among different social groups.
d. Once chirrapunji was famous because it received the highest rainfall in world. Today this area faces an acute water shortage. This is a consequence of extensive deforestation and no efforts toward rainwater harvesting.

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2. How intensive industrialization and urbanization have passed a great pressure on existing fresh water resources in India? Explain with two examples for each.

Ans. a. Post independent India witnessed intensive industrialization and urbanization.
b. The ever increasing number of industries has made matters worse by creating pressure on existing freshwater resources. Industries apart from being heavy users of water also require power to run them.
c. Much of this energy comes from hydroelectric power.
d. Multiplying urban centers with large and dense populations and urban lifestyles have not only added to water and energy requirement but have further aggravated the problem.
e. If we look into the housing societies or colonies in the cities, you would find that most of these have their own groundwater pumping devices to meet their water needs. Not surprisingly we find that fragile water resources are being over-exploited and have caused

their depletion in several of these cities.

3. Give any five examples of traditional water harvesting system prevalent in various parts of India.

Ans. a. In hill and mountainous regions, people built diversion channels like the 'guls' or 'kuls' of the western Himalayas for agriculture.
b. 'Rooftop rain water harvesting' was commonly practiced to store drinking water, particularly in Rajasthan.
c. In the flood plains of Bengal, people developed inundation channels to irrigate their fields.
d. 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 'khadans in jaisalmer and 'Johads' in other parts of Rajasthan.
e. In Meghalaya, a 200 years old system of tapping stream and spring water by using bamboo pipes is prevalent.

4. What is the 'Narmada Bachao Andolan'? Why was it organized? What are the issues raised by this movement?

Ans. a. Narmada Bachao Andolan is prominent social movement to acquire access and control natural resources endowed to the local people.
b. The activities of the Narmada Bachao Andolan in the late 1980s and 1990s brought worldwide attention to the plight of the people from the area of Sardar Sarovar Dam across the Narmada River who is spread over the states of Gujarat, Maharashtra and Madhya Pradesh.
c. Narmada Bachao Andolan is a non Government Organisation that mobilized tribal people, farmers, environmentalists and human rights activists against Sardar Sarovar Dam.
d. It originally focused on the environmental issues related to trees that would be submerged under the dam water.
e. Recently it has refocused the aim to enable poor citizens, especially the oustees to get full rehabilitation facilities from the government.

5. Write a short note on Hydraulic structures of ancient India.

Ans. a. In the first centuray b.c., Sringaverapura near Allahabad had sophisticated water harvesting system channeling the flood water of the river Ganga.
b. During the time of Chandragupta Maurya, dams, lakes and irrigation systems were extensively built.
c. Evidences of sophisticated irrigation works have also been found in Kalinga (Odisha), Nagarjunakonda (Andhra Pradesh), Bennur (Karnataka), Kohlapur (maharashtra), etc.
d. In the 11th centuray, Bhopal Lake, one of the largest artificial lakes of its time was built.
e. In the 14th century the tank in Hauz Khas, Delhi was constructed by Iltutmish for supplying water to Siri Fort Area.

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6. Discuss how rainwater harvesting in semi-arid regions of Rajasthan is carried out.

Ans. a. Rooftop rain water harvesting is commonly practiced to store water.
b. 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.
c. In the semi arid and arid regions of Rajasthan, particularly in Bekaner, Phalodi and Barmer, almost all the houses traditionally had underground tanks or tankas for storing were.
d. In Western Rajasthan, the practice of roof top rainwater harvesting is on the decline as plenty of water is availability due to the perennial Rajasthan Canal, though some houses still maintain the tankas since they do not like the taste of tap water.

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7. Describe how modern adaptation of traditional rainwater harvesting methods is being carried out to conserve and store water?

Ans. a. Rooftop rainwater is collected through a pipe into the underground tanks. Rooftop rainwater harvesting is practiced in Shillong and Meghalaya where nearly 15 to 25 percent of actual water requirement is met from rooftop water harvesting.
b. In Many parts of rural and urban India, rooftop rainwater harvesting is successfully adopted to conserve and store water.
c. In Gandathur a village in Karnataka and nearly 200 households has installed this system. From 20 houses, the net amount of rainwater harvested amounts to 1, 00,000 liters annually.
d. In Meghalaya, Bamboo drip is practiced to transport stream and spring water by using

Bamboo pipes.
e. Several low cost techniques are now available to recharge groundwater and harvest the rainwater like, construction of proclamation ponds, refilling of dug wells and collection of rainwater and storing it in tanks or ground.

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8. What is multi-purpose river valley project? State any four objectives of multi-purpose river valley projects.

Ans. Multipurpose river valley projects are meant to tackle various problems associated with river valleys in an integrated manner. Following are the objectives of Multi-purpose river valley projects:
a. To control floods.
b. Check soil erosion.
c. Generate electricity
d. Provide inland navigation
e. Encourage tourism and recreation
f. Conservation of water.

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9. In recent years, multipurpose projects and large dams have come under great scrutiny and opposition. Explain why.

Ans. a. Some social movements have opposed such large dams due to fact that local communities have been displaced and rooted out of their original settlement areas.
b. Dames have also been a potent cause in creating conflicts between states, wanting to avail benefits from the same water resources.
c. Sedimentation in the reservoir gas caused floods. These dams were constructed to control floods.
d. These dames caused land degradation. The flood plains were deprived of silt which is natural fertilizer.
e. These dams caused water borne disease, pest and pollution of water due to excessive use.

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10. Three –fourths of the world is covered with water and water is a renewable resources. Yet many countries and regions around the globe suffer from water scarcity. Explain.

Ans. We know that three-fourth of the earth's surface is covered with water, but only a small proportion of its accounts for freshwater that can be put to use. This freshwater mainly obtained from surface run off and ground water that is continually being renewed and recharged through the hydrological cycle ensuring that water is a renewable resource. 96.5 percent of the total volume of world's water is estimated to exist as oceans and only 2.5 per cent as fresh water. Nearly 70% of this fresh water occurs as ice sheets and glaciers in Antarctica, Greenland and the mountainous regions of the world, while a little less than 30 percent is stored as groundwater in world's aquifers.

MCQ

Q.1 The total volume of the world's water is estimated to exist as ocean:

(a) 75.5% **(b) 85.5%**

(c) 95.5% (d) 65.5%

Ans.(c) 95.5%

Q.2 Roof top rainwater harvesting is the most common practice in-

(a) Shillong (b) Guwahati

(c) Imphal (d) Patna

Ans.(a) Shillong

Q.3 On which river has Nagarjun Sager Dam been constructed?

(a) River Coyana (b) River Krishna

(c) River Godavari (d) river Tapti

Ans.(b) River Krishna

Q.4 How much %of the Earth's Surface is covered with water?

(a) About 70% (b) About 90%

(c) About 60% (d) None of these

Ans.(a) About 70%

Q.5 What is the rank of India in the world countries in the terms of Water availability per person p.a.?

(a) 129th (b) 130th

(c) 131st (d) 133rd

Ans.(d) 133rd

Q.6 It is predicated that nearly 2 billion people will live in absolute water scarcity in the year of –

(a) 2015 (b) 2020

(c) 2025 (d) 2030

Ans.(c) 2025

Q.7 The first & the only state in India which has made Roof Top Rain water Harvesting Structured

compulsory to all the across the state is –

(a) Karnataka (b) Tamil Nadu

(c) Kerala (d) none of these41

Ans.(b) Tamil Nadu

SHORT ANSWER QUESTIONS

Q.1 State any three objectives of Rainwater harvesting?

Ans: (a) To reduce run off water

(b) To raise the water table

(c) To reduce ground water pollution

Q.2 What is multipurpose river valley project? State any two purposes which are fulfilled by a river valley project?

Ans: Multipurpose river valley project consists a dam or series of dames on a river or rivers for fulfill many purposes like:

(a) irrigation

(b) electricity

(c) control flood

(d) check soil erosion

(e) inland navigation

(f) fisheries etc.

Q.3 Mention three major sources of irrigation in India, which source of irrigation is more popular in southern state? and Why?

Ans : (I) The three major sources pf irrigation in India are –

(a) Canals

(b) Wells & tube wells

(c) Tanks

(II) Tank irrigation

(III) Because Southern States are mostly come under Deccan plateau

which are not suitable for irrigation by canals

Q.4 What is "Water scarcity" what are its main causes?

Ans: "Water scarcity" means shortage of water.

CAUSES: (may write any two)

(a) Unequal distribution of rainfall

(b) Large & growing population

(c) Over exploitation of water

(d)Wastage of water by people (Explain all in brief)

Q.5 Name any two multipurpose river valley projects or dams which are causes of new social movements. Why did people oppose them?

Ans : Two Multipurpose project which are caused social movements –

(a) Narmada –Bachao Andolan

(b) Tehri-Dam Andolan

(c) Sardar Sarover Dam

-Large scale displacement of local communities

-Environment issues

-Demand for Rehabilitation facilities from Govt.

Q.6 Explain in brief –

(a) Bamboo drip Irrigation System

(b)Khadins & Johads42

(c) Guls & Kuls

Ans:

(1) In Meghalaya, 200 years old system of tapping stream and spring water by using Bamboo –pipes.

(2) People built division channels from rivers for irrigation to their field in western Himalaya is called Guls or kuls .

(3) People developed inundation channels to irrigate their fields were converted into rain storage structure in particularly western Rajasthan Jaisalmer called Khadins and Johads in other parts of its state**.**

Q.7.Why do we conserve water resources?

Ans: i)To safeguard ours from health hazards

ii) To ensure food scarcity

iii) To protect natural ecosystem (Explain all in brief)

LONG ANSWER TYPE QUESTIONS

Q.1 How can rainwater be harvested? Explain. (Four points)

Ans : Rainwater can be harvested in the following ways :(any four points)

i) By digging ponds and tanks.

ii) By building embankments and check dams.

iii) By making arrangements for storage of rainwater on rooftops.

iv) By constructing concrete underground reservoirs.

v) By constructing reservoirs in park and public places and covering them with concrete slabs.

vi) Building plans should invariably be made only when there is a provision for water harvesting.

Q.2 What is the different causes of water pollution? Explain by four reasons.

Ans: The different causes of water pollution are:

(a) Mix-up of domestic wastes

(b) Mix-up of Industrial wastes,

(c)Use of Chemicals, pesticides and fertilizers used in agriculture

(d) Oil slicking by ships in oceans (Explain all in brief)

Q.3 Match the following

Column A	**Column B**

1. Social movement	a) highest rainfall in the world
2. A dam	b) temples of modern India
3. Jawaharalal Nehru declared the dams as the	c) a barrier across flowing water that obstructs the flow
4. Mawsynram	d) Narmada Bachao Andolan.