Chapter 6. Water Resources

Very Short Questions

Question 1: What do you mean by irrigation?

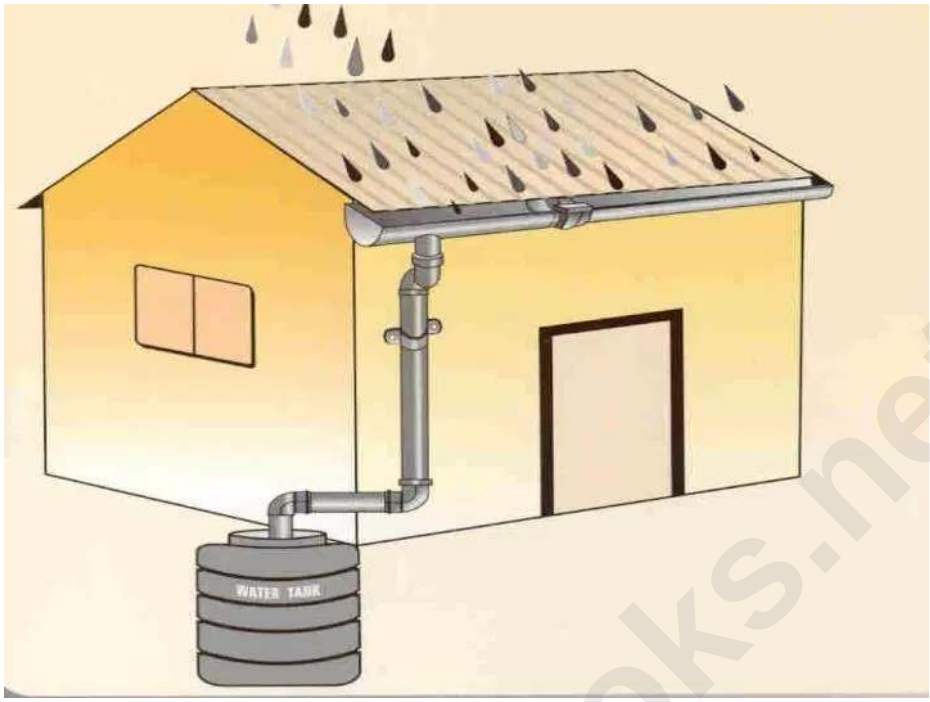
Answer: The man-made arrangements of supplying water to the fields are known as irrigation.

Question 2: Name one State where tank irrigation is important. Give three disadvantages of tank irrigation.

Answer: Tamil Nadu is the state where tank irrigation in important.
The disadvantages of tanks:
(i) They occupy large areas of land which could be used for cultivation.
(ii) There is also a lot of evaporation as these tanks are usually shallow.
(iii) Construction entails much expenditure.

Question 3: What is meant by Rain Water Harvesting?

Answer: It is the term used for capturing the rain water which would normally fall off and get wasted. It is used for the garden, washing clothes, etc.



Short Questions

Question 1: Why is canal irrigation more popular in Northern India?

Answer: (i) The rivers are perennial as they are fed by the melting snows, (ii) The surface of the land is almost flat and soft. Hence it is easy to dig canals, (iii) The demand for irrigation is very great in North India as a variety of crops are grown, (iv) Type of cultivation is intensive.

Question 2: What is Garden Watersaver Diverter (GWS)? What advantage does it have over other rain water harvesting devices?

Answer: It is a downspout rain water diverter which simplifies the collection of rain water. It has advantages over other rain water collection systems in that it is installed in minutes and deactivates in seconds during winter when stored water is not needed. As it is kept underground or in low visibility locations more containers can be added (linked) or filled by simply moving a hose pipe.

Question 3: What is the purpose of the float switch in the Super Rainwater System?

Answer: The float switch is an innovative device mounted on the tank which automatically controls the water supply. If the rain water tank is full it will automatically pump the rain water for use in the garden or washing machine. If the rain water tank is empty or when there is a dry spell and water in the tank falls to the minimum level, the floating switch triggers the use of the normal mains water.

Question 4: Mention two advantages of rainwater harvesting.

Answer: Two advantages of rainwater harvesting are:
(i) Recharge of groundwater

(ii) Conservation of water, reduces surface runoff.

Question 5: Mention two advantages that surface wells have over inundation canals.

Answer: Wells are an independent source of irrigation. It may be used as and when the necessity arises.
(i) Wells are simplest and cheapest source of irrigation, can be dug at any convenient place.
(ii) Inundation canals are 'flood-water' canals and have water in them only when the river is flooded during the rainy season.

Question 6: Name two states in which tube wells are extensively used. Give a reason to explain its importance as a source of irrigation.

Answer: Tube wells are extensively used in Punjab and Haryana because the land is soft to bore and availability of electric power.

Question 7: Give two advantages and one disadvantages that tube wells have over surface wells.

Answer: Advantages: Tube wells do not result in evaporation of water like suface wells. It irrigates large area (400 hectares).
Disadvantage: However tube wells are only possible in areas where the groundwater level is not too low power is needed to drain water.

Question 8: Where are tanks most widely used in India? Why?

Answer: Tanks are mostly used in peninsular India. This is because
(i) Peninsular India consists of hard impervious rocks which favours the storage of water.
(ii) Depression in the plateau region can be used as Natural tanks.

Long Questions

Question 1: What are the favourable conditions in India for the development of irrigation?

Answer: **(i) Perennial Rivers:** There are a number of rivers which flow throughout the year because they are fed by the melting of snows.
(ii) Suitable spots for the construction of dams: Along the Indian streams there are many places suitable for construction of dams or embankments across the streams for impounding the water.
(iii) Inexhaustible store of underground water: A large proportion of the rain water finds its way underneath the surface by percolation and remains stored in the aquifer rock-layer. This underground water can be tapped for irrigation when required.
(iv) Arable land is level: Arable lands in India are confined to the northern plains and also parts of deltaic India which are level and suitable for the construction of canals.
(v) Abundance of natural depressions in Southern India: Peninsular India is mostly a plateau region with rolling uplands. There are a number of natural depressions. Only an earthern embankment is required to check the outflow.

Question 2: What are the reasons that necessitate artificial irrigation?

Or

What is the importance of irrigation?

Answer: Artificial irrigation has to be resorted to for the following reasons:
(i) Indian rainfall is periodic. Most of the rainfalls is in four months from June to September. The remaining eight months are dry.
(ii) Rainfall is not well distributed during the rainy season. During the four months of the monsoon, there are spells of dry weather. There are regions where the rainfall is scanty, e.g., Rajasthan, Punjab, Haryana, the interior parts of Peninsular Plateau get much less rain than is required.
(iii) Agricultural crops are varied. The requirements of water varies for different crops. Rice requires heavy rain. Sugarcane, tobacco, vegetables also require regular and abundant supply of water.
(iv) Ample supply of water is required during the period of growth.
(v) India is a hot country. Evaporation is rapid.
(vi) Drought conditions. In India droughts commonly occur. This becomes a problem not only for agriculture but also the economy of the entire country.

Question 3: With reference to well irrigation, answer the following questions:
(i) Name two states in which well irrigation is widely used.
(ii) Name two types of well used for irrigation in these states.
(iii) Describe two methods of drawing water from the wells.
(iv) Give two advantages and two disadvantages of wells.

Answer: (i) Uttar Pradesh, Punjab, Haryana.
(ii) Ordinary wells and tube-wells.
(iii) The prevailing methods are the Persian Wheel, Mhote and the Picotin.
The Persian wheel: It is also known as 'Rehat' and is worked by bullocks, buffaloes or camels.
Mhote: It is also worked by bullocks moving up a sloping ramp to pull up a big leather bucket.
Picotin: In this device a vertical pole is employed for balancing the bucket and the equivalent load fixed on either ends. It is also known as 'Dhenkuli'.
(iv) Advantages: (a) easy to dig and construct, (b) cheap
Disadvantages: (a) wells can irrigate a very small area about half an hectare of land.
(b) In times of drought they run dry. (c) Besides there is strain on the animals.

Question 4: What are the several methods applied for lifting water from wells?

Answer: Several methods are used for lifting the water. The prevailing methods are the Persian Wheel, Mhote and the Picotin.
The Persian Wheel: It is also known as 'Rehat' and is worked by bullocks, buffaloes or camels.
Mhote: It is also worked by bullocks, moving up a sloping ramp to pull up a big leather bucket.
Picotin: In this device a vertical pole is employed for balancing the bucket and the equivalent load fixed on either ends. It is also known as 'Dhenkuli'.

Question 5: Give (i) two advantages of tube-wells as a method of irrigation, (ii) What are the conditions necessary for tube-wells.

Answer: (i) (a) Tube-wells can irrigate a larger area about 400 hectares,
(b) They are definitely better in times of drought when surface wells dry up.
(c) The process of irrigation is quicker and more convenient.
(ii) The conditions necessary for tube wells are:
(a) Sufficient ground water.
(b) Cheap electric power must be made available.

Question 6: What are the demerits of canals? How to overcome these defects?

Answer: (i) Salt effervescence: The cultivators misuse canal water by overflooding the fields. It leads to salt-effervescence which makes the soil infertile. The farmers have to be educated in the careful utilization of canal water.
(ii) Water-logging: It is a serious problem which has rendered extensive area unfit for farming. The canals are generally unlined. Hence water seepage towards the adjoining areas goes on, turning them into swamps. For solving this problem:
(a) Canals should be lined with brick and mortar along the embankments.
(b) Wells may be dug in water-logged areas so that the water may soak down into these wells.
(c) Swamps may be dried up, by draining out the water with the aid of power-driven pumps.
(d) Gypsum can be used which makes the soil fertile again.

Question 7: Why should we save rain water?

Answer: (i) Approximately, 40% of water used in summer is used outdoors, for the garden and trees. This is the period when water shortages occur and cities have to resort to restricting water supply.
(ii) The more rain water is used, the less will go into the sewers it gets mixed with oil and other toxic residues from the cities.
(iii) Saving water saves money and helps the environment. The more rain water is used, the less the need to use chlorinated water or chemically treated tap water.
(iv) There is saving on water bill to the extent of 30% to 50% for domestic users and 80% for commercial users of the treated drinking water from the mains. Having metered water is the best way of appreciating this difference.

Question 8: What is a rain water harvester? How does it work?

Answer: It is a storage tank usually fitted underground to your down pipes coming from the roof. Rainwater enters the tank through a filter which removes the leaves and other debris. The system contains a pump which pushes or sucks the rain water back into the house where it is delivered to the toilets or clothes washing machine. The tank is placed in the dark and kept oxygenated to prevent the growth of algae. This filtered untreated water should not be used for drinking.
Rain water harvesters can be installed in houses, bungalows, large sheds or any building with a roof on it to capture the rain water. Commercial premises are very suitable as they

often have a larger roof space and higher percentage of water use that can be replaced by rain water.

Question 9: What is the importance of rain water harvesting?

Answer: (i) The demand for water is increasing. The urban population of India has increased five times in the last five decades from 62.4 million in 1951 to 286 million in 2001. The demand for water has concomitantly grown to almost double the amount of water a citizen ordinarily requires.
(ii) Till not very many years back our cities were self-sufficient for water. Today, water bodies are disappearing and ground water is being extracted. The rivers are getting polluted.
(iii) The management of water is in the hands of the states. This has led to communities and
households ho longer being the agents of water management.
(iv) The earlier use of rain water and flood water has declined. In its place, an ever growing reliance on river water and ground water has arisen. This has led to such large scale extraction of ground water both by the government and private bodies that our river basins are getting polluted.
(v) Large dams are constructed to store water and canals constructed to distribute the water. The former have caused large scale displacement of communities and ecological havoc, while the latter has brought large scale degradation of land due to soil salination. Water availability both in terms of quality and quantity has declined to such an extent that many parts of India face a drought like situation.

Question 10: (i) Name two methods of water harvesting in India.
(ii) Mention any two objectives of rain water harvesting.

Answer: (i) Two methods of water harvesting in India are:
(a) Collecting of rain water on the roof top and directing to any tanks.
(b) Watershed is defined as a geographic area through which water flows across the land

and drains into common body of water such as stream, river, lake, ocean, etc.
(ii) Objectives of rain water harvesting:
(a) To avoid flooding of roads
(b) To raise ground water lable.

Question 11: Mention any three water harvesting systems practised in India.

Answer: (i) The simplestrainwater harvesting technique is the check dam. It is a small barrier built across streams. They store water during the monsoons which can then be used for irrigation etc.
(ii) Another rainwater harvesting technique is the storage tank kept underground and connected to the pipe coming down from the roof. The rain water enters the tank through a filter which removes leaves and other debris. The system contains a pump which pushes or sucks the rain water back into the house which is then delivered to the garden, washing clothes etc.
(iii) Another rainwater collection system is the Garden Watersaver diverter (GWS). It is a downspout rainwater diverter which simplifies the collection of rain water. It has advantages over other rainwater collection systems in that it instals in minutes and deactivates in seconds during winter when stored water isn't much needed.

Give Reasons

Give Geographical Reasons for the following:

Question 1: Give two main reasons why water scarcity occurs in India.

Answer: Water scarcity occurs because:
(i) Seasonal rainfall
(ii) More demand due to increase in Population and Polluted water.

Question 2: Irrigation is necessary despite the monsoon.

Answer: Indian monsoons are most uncertain. Late arrival or early withdrawal of the monsoon affects crop production severely. Only irrigation can provide security to agriculture from such irregularity.

Question 3: The drip method of irrigation is the best among all modem methods of irrigation.

Answer: The drip method of irrigation does not involve any loss of water by seepages because water is supplied through pipes. No water is lost by evaporation because water is supplied directly on to the roots of the plants.

Question 4: Canal irrigation leads to the ground around it becoming unproductive.

Answer: Excessive flow of water in the fields raises the grounds water level. Capillary action brings alkaline salts to the surface and makes large areas unfit for agriculture.

Question 5: Give three reasons for conservation of water resources.

Answer: Conservation of water resources has become essential due to:
(i) The increase in population with the progress of time results in water scarcity.
(ii) Our water resources like the river, lakes etc., are polluted and their water can hardly used without adequate treatment.
(iii) The water demand for industrial use will increase day by day.

Question 6: Irrigation is very necessary for solving the food problem.

Answer: Agricultural crops are varied. Ample supply of water is required during the period of growth.

Question 7: Give reasons for the popularity of tanks in South India.

Or

Peninsular India is an ideal region for constructing tanks. Why?

Answer: South India is very favourable for tanks as there are a number of natural depressions. The underlying rocks of the southern plateau are hard, impervious, which check the percolation of water underneath. The rivers of Peninsular India flow through narrow gorges where it is easier to construct dams across the river channels for impounding the water. Besides the surface is hard, sloppy, making it difficult to construct wells or canals.

Question 8: Irrigation arrangements are no less important in areas of heavy rainfall in India.

Answer: (i) Indian rainfall is periodic: Most of the rain falls in four months from June to September. The remaining eight months are dry.
(ii) Rainfall is not well-distributed during the rainy season: During the four months of the monsoon, there are spells of dry weather.

Differentiate

Question 1: What geographical advantages for irrigation does the Indo-Gangetic Plain have over the Deccan?

Answer:

Indo-Gangetic	Deccan
1. A number of perennial rivers fed by the melting snows.	Rivers are seasonal depending on the monsoons.
2. The surface is flat and soft.	The surface is hard, rocky and sloppy.

Question 2: Distinguish between Inundation canals and Perennial canals or Why are Perennial canals more important than inundation canals?

Answer:

Inundation Canals	Perennial Canals
1. They are taken out from the rivers without constructing dams, barrage, embankments.	They are taken out from the rivers or reservoirs by constructing dams or barrages.
2. They are full of water only in the rainy season or when the river is in flood.	They have water throughout the year as the water is stored behind the dam.

Name the Following

Question 1: Name the State which leads in irrigation by wells in India.

Answer: Uttar Pradesh.

Question 2: Name the types of irrigation prevailing in India.

Answer: The prevalent types of irrigation in our country are:
(i) Wells: both ordinary and tube-wells, (ii) Tanks, (iii) Canals.