



UNIQUE STUDY POINT

WATER

Question 1: Fill up the blanks in the following:

- (a) The process of changing of water into its vapor is called _____.
- (b) The process of changing water vapor into water is called _____.
- (c) No rainfall for a year or more may lead to _____ in that region.
- (d) Excessive rains may cause _____.

Answer: (a) The process of changing of water into its vapor is called **evaporation**.

- (b) The process of changing water vapor into water is called **condensation**.
- (c) No rainfall for a year or more may lead to **drought** in that region.
- (d) Excessive rains may cause **floods**.

Question 2: State for each of the following whether it is due to evaporation or condensation:

- (a) Water drops appear on the outer surface of a glass containing cold water.
- (b) Steam rising from wet clothes while they are ironed.
- (c) Fog appearing on a cold winter morning.
- (d) Blackboard dries up after wiping it.
- (e) Steam rising from a hot girdle when water is sprinkled on it.

Answer:

- (a) Condensation
- (b) Evaporation
- (c) Condensation
- (d) Evaporation
- (e) Evaporation

Question 3: Which of the following statements are "true"?

- (a) Water vapour is present in air only during the monsoon. ()
- (b) Water evaporates into air from the oceans, rivers, and lakes, but not from soil. ()
- (c) The process of water changing into its vapour is called evaporation. ()
- (d) The evaporation of water takes place only in sunlight. ()
- (e) Water vapour condenses to form tiny droplets of water in the upper layer of air, where it is cooler. ()

Answer: (a) False: some amount of water vapour is always present in air in all seasons.

(b) False: water also gets evaporated from the upper layer of the soil.

(c) True

(d) False: evaporation of water may take place in absence of sunlight. During the daytime all the air surrounding us gets heated. This warm air provides heat for evaporation of water in absence of sunlight.

(e) True

Question 4: Suppose you want to dry your school uniform quickly. Would spreading it near an anghiti or heater help? If yes, how?

Answer: The rate of evaporation increases with increase in temperature. So, near the anghiti or heater, the rate of evaporation will be higher and the uniform will dry up quickly.

Question 5: Take out a cooled bottle of water from refrigerator and keep it on a table. After some time you notice a puddle of water around it. Why?

Answer: This is because water vapour present in air collide with the surface of cold water bottle which and condenses into water droplets. These water droplets collect and form a puddle of water around the bottle.

Question 6: To clean their spectacles, people often breathe out on glasses to make them wet. Explain why the glasses become wet.

Answer: When we breathe out, moist air comes out (along with energy and carbon dioxide) which make the glasses wet (as water vapours get condensed on glass).

Or

When we breathe out, we exhale carbon dioxide gas along with water vapours. The water vapour on colliding with the surface of the glass gets condensed due to which the glass becomes wet. This slightly wet glass can be easily cleaned with a soft cloth.

Question 7: How are clouds formed?

Answer: Clouds are formed by the process of evaporation and condensation. Water from the oceans, rivers, lakes, ponds, plants, fields, and other land surfaces evaporates, gets into air, and rises up in the atmosphere. At a certain height when the air becomes cooler, water vapour contained in air condenses. On condensation, these form water droplets. These water droplets collect and float in air as clouds.

Question 8: When does a drought occur?

Answer: Scarcity of water at a region due to very less or no rainfall for a long time leads to drought in that region.

Or

If it does not rain in a region for a year or more. The soil continues to lose water by evaporation and transpiration. Since it is not being brought back by rain, the soil becomes dry. The level of water in ponds and wells of the region goes down and some of them may even dry up. The ground water may also become scarce. This situation may lead to drought.

Short Answer Type Questions

Question 1. How much water does a man use daily? Give a rough idea.

Answer: 50-100 litres.

Question 2. What are the various activities for which water is needed?

Answer:

- Bathing
- Drinking
- Washing clothes
- Toilet etc.

Question 3. Why is water important for us?

Answer:

- Water regulates body temperature by the process of respiration and evaporation.
- All metabolic reactions in the body take place in aqueous medium.
- It transports minerals and food materials in plant's and animal's body.

Question 4. Why rivers originating from Himalayas do not dry during summer?

Answer: Rivers originating from the Himalayas do not dry up during summers because they continue to get water from the melting snow on the mountains.

Question 5. What do you mean by potable water?

Answer: The water which is suitable for drinking is called potable water.

Question 6. Name some sources of water.

Answer: Hand pump, tube well, river, pond, lake, ocean, etc.

Question 7. What is the ultimate source of water?

Answer: Rain.

Question 8. What are the different forms of precipitation?

Answer: The different forms of precipitation are:

- Rain
- Hail/Snow
- Dew.

Question 9. Is evaporation endothermic or exothermic process?

Answer: Evaporation is endothermic process.

Question 10. Can we use the water in the oceans and seas for drinking and other purposes? Why?

Answer: No, we cannot use the water in the oceans and seas for drinking and other domestic agricultural and industrial needs because it has much salts dissolved in

Question 11. What is water cycle?

Answer: The water cycle is the journey of water from the oceans and other large bodies of water to the land and from the land back to the water bodies. The water cycle is also called the hydrologic cycle. The main driving forces of the water cycle are the sun's heat and gravity.

Question 12. What are the different ways by which water vapour is put into the atmosphere?

Answer: Water in oceans, lakes and ponds gets evaporated due to atmospheric heat. Factories and thermal power stations produce a lot of steam and put it into the atmosphere. Plants throw out water vapour by transpiration. Animals excrete water vapour through respiration and sweating. All this vapour accumulates in the atmosphere.

Question 13. How will you show the presence of water vapour in the air?

Answer: First, take a clean glass and put some ice cubes in it. Keep it in the open air. After some time, small droplets of water will be observed on the outer surface of the glass. This is because water vapour in the air comes in contact with cold surface of glass and condenses. These droplets of water are due to condensation of water vapour present in the air.

Question 14. What is the importance of water cycle?

Answer: The water cycle is important for us because of the following reasons:

- Water cycle helps in regulating weather on earth.
- Water cycle makes water available in its various forms on the earth. The most important is the rainwater.

Question 15. What is fog? How is it formed?

Answer: In winters, sometimes condensation of water vapour in air may also take place near the surface of the earth. This water vapour in air near the surface of earth is termed as fog.

Question 16. We know that water changes into vapour when heated. But it is a common experience that water from wet roads, rooftops and floors disappears without heating. Explain how water changes into its vapour even without heating?

Answer: During the day time, sunlight falls on the water in oceans, rivers and lakes. The fields, roads, rooftops and other land areas also receive sunlight. The sunlight also carries heat with it. As a result, water from oceans, rivers, lakes and the soil, and other land areas gets continuously changed into its vapour.

Question 17. What is transpiration and write the factors affecting it?

Answer: A part of water absorbed by the plants is released by plant through their leaves into the air by a process called transpiration.

Transpiration is affected by the following factors:

- Temperature.
- Humidity.
- Windspeed.
- Time of the day.

Question 18. In which seasonal most of the rain occurs in our country?

Answer: Monsoon season.

Question 19. What are the consequences of large and prolonged rain?

Answer: Excess of rainfall may lead to rise in the level of water in rivers, lakes and ponds. The water may then spread over large areas causing floods.

Question 20. What are the major losses due to the flood?

Answer: In our country, floods cause extensive damage to crops, domestic animals, property and human life.

Question 21. What would happen if it does not rain in a region for a year or more?

Answer: It will result in a drought.

Question 22. What are the consequences of drought?

Answer: In drought conditions, it is difficult to get food and fodder

Question 23. What do you understand by epidemic?

Answer: Epidemic refers to the disease that spreads over a large population of distant areas, e.g., cholera, plague, etc.

Question 25. What are the various methods of rainwater harvesting?

Answer:

- Rooftop rainwater harvesting: In this system, the rainwater from the rooftop is collected in a storage tank through pipes.
- A big pit is dug near house for collecting rainwater. This pit is filled with different layers of bricks, coarse gravels and sand or granite pieces.

Long Type Answer Questions

Question 1. Explain the role of plants in adding water vapours into atmosphere.

Answer: There is yet another process through which water vapour gets transferred into the air. This process involves plants. All plants need water to grow. Plants get this water from the soil, which is absorbed from it by their roots. A part of this water is used by them to prepare their food. Some water is retained by different parts of the plants like roots, stem, leaves, flowers and fruits. However, a large part of this water is released by the plants into air as its vapour. Most of the water lost by the plants in this process is through their leaves. This process is known as transpiration.

Every plant whether it is in a crop field, a forest, on the roadside or in a kitchen garden transpires to give off water vapour. The amount of water vapour that goes into the air through the process of transpiration is very huge. To give an idea, let us consider an example. Suppose a crop of corn has been sown in a plot which is 100 metre long and 100 metre wide. The amount of water that this crop of corn would lose through transpiration during one season would be roughly aqueous to water in a 90 centimetre high tank spread over the plot of land.

Water lost through transpiration by wheat plants that give us one kilogram of wheat is roughly 25 large sized buckets full of water, i.e., nearly 500 litres.

Thus, we can see that water vapours get continuously added to air by the plants during the process of transpiration.

Question 2. Briefly describe the water cycle. Also explain its importance.

Answer: Water on heating turns into water vapour. Water vapour on cooling gives water again. The change of water from one form to other form over and over again makes the water cycle in nature.

The sun heats up and evaporates the water from oceans, ponds, lakes and rivers. This water vapour being lighter is carried up by the air. This water vapour gets cooled at height and water droplets are formed. These water droplets form a cloud. When these water droplets in the cloud come close together, they form drops of water. These drops of water may fall on the earth as rain.

The rain is absorbed by the soil. A part of rain water collected in the rivers flows into the sea, where again the evaporation occurs. This completes the water cycle

Thus, now we know how water gets circulated between the oceans and land through evaporation, transpiration, precipitation and its downhill flow by different routes. This process of circulation of

water is known as water cycles. Water cycle helps in maintaining continuous supply of fresh water to all living things on land. No life on land would have been possible without water cycle.

Question 3. What is precipitation? Does precipitation in atmosphere always result in rain?

Answer: We think of rain or snow when clouds appear in the sky. But, many a times, it does not rain even though the sky may be covered with clouds. We now know that clouds carry small droplets of water in them. It may so happen that:

- Many droplets of water come together to form larger sized drops of water. Such drops of water may become so heavy that they begin to fall. Falling of water drops is called precipitation. If the water during precipitation remains liquid till it reaches the surface of the earth, we have rains.
- Sometimes precipitation may be in the form of hail or snow. Water in a hail or snow is in its frozen or solid form.

Many a times, especially during winter nights, the air near the surface becomes cool. As a result, the water vapour present in it condenses to form water droplets. These water droplets appear as dew, which you might have observed on leaves or flowers in the morning during winters.

Question 4. Mention the main processes that help in the circulation of water in nature.

Answer: Main processes that help in circulation of water in nature are evaporation and condensation. The process of conversion of water into its vapour is known as evaporation. Evaporation of water takes place continuously from oceans, rivers and other water bodies such as lakes and ponds. This water vapour becomes a part of the atmospheric, air.

The water vapour present in the air moves to different places along with the wind. When vapour reaches at a certain height, it gets cooled and turns into very tiny water droplets. These droplets become visible to us in the form of clouds. Ultimately, the water comes down to the surface in the form of rain or snow. This process of conversion of vapour into water is known as condensation. Circulation of water by evaporation and condensation in this manner is known as water cycle.

Question 5. Explain various paths by which water that falls on land as rain goes back to oceans.

Answer: Water that falls on the land as rain and snow sooner or later goes back to the ocean This happens in many ways.

Almost all land surfaces are above the level of oceans. When rain falls on the land, the water flows down towards the ocean This flow of water is often in the form of rivers and streams. Sometimes, the water gets trapped in large craters and natural basins on its way to the ocean The rainwater fills up the craters or basins to form lakes. If the lakes or basins have an outlet like a river, the water again begins to flow towards oceans.

A part of the rainwater gets absorbed by the ground and seems to disappear in the soil. Some of this water is brought back to the air by the process of evaporation and transpiration. Rest of it continues to seep deeper and deeper under the ground until it is stopped by layers of rock that do not allow water to pass through them. This water is known as groundwater. However, this water may seep through those rocks that let the water to pass through. The water then appears as a spring. Many lakes, ponds and wells are fed by such springs.

Water deposited in the form of snow in mountains also finds its way to an ocean or a sea. Water in rivers, like Ganga and Yamuna, is due to the melting of snow in the lower regions of the Himalayan mountains. All these rivers ultimately terminate in the sea.

Question 6. Write five sentences to conserve water.

Answer:

1. Water is a precious gift of nature.
2. We should not waste it. Try to 'save every drop of water'.
3. Always be careful that water tank in your house does not overflow when it is being filled.
4. If we leave the tap running while brushing our teeth, nearly 16 litres of water get wasted. We should fill a mug of water and use that instead.
5. We should not water our garden by drinking water instead we have to reuse the water from washing clothes and cleaning utensils.

Question 7. What is water pollution and write its causes?

Answer: The contamination of water due to human activities is known as water pollution. Causes of water pollution are:

- Washing of clothes and utensils.
- Disposal of household sewage and garbage.
- Disposal of industrial effluent.
- Bathing of animals.

Question 8. Write two ways of water harvesting in Delhi. Discuss in brief.

Answer: Ways of water harvesting in Delhi:

1. Collecting water from the rooftops of houses, flats and other buildings: Rainwater that falls on the rooftops is brought down through pipes and collected in pits. The sides of these pits are lined with concrete. Their bases, however, are unlined and have layers of stone chips, sand and coal tar. These layers sieve the water as it slowly, seeps through into the ground. This raises the level of the groundwater. The groundwater can be used in the future by bringing it up with hand pumps and borings.

2. Collecting water at street corners: Rainwater that falls on tarred roads is completely wasted as it does not seep into the ground. This water can be collected by making holes in the pavement at street corners. The rainwater can then be collected in pits under the pavement and slowly seeped into the ground. Jamia Hamdard University in Delhi has already started using this way of water harvesting.

Question 9. What are the advantages of water harvesting?

Answer: Advantages of water harvesting:

- In areas where there is very low rainfall, water harvesting is the only way to reduce the water shortage.
- There is an increase in the level of groundwater.
- The effects of drought are lessened.
- Places not situated near a river or large lakes have to rely on groundwater. Water harvesting is very important in such areas.
- Water logging of low-lying roads and streets is prevented.
- Soil and water pollution is reduced.

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