

ANSWERS

Chapter 6: Air and Water

Checkpoint 1

1. Atmosphere
2. Thermosphere
3. Oxygen
4. Nitrogen
5. Neon
6. Glycol in water

Checkpoint 2

1-e, 2-a, 3-b, 4-d

What I Have Learnt

I. Objective Type Questions.

- | | |
|------------------------------|--------------------|
| A. 1. b. nitrogen and oxygen | 2. c. mesosphere |
| 3. a. nitrogen | 4. c. both a and b |
| 5. a. Chlorination | 6. b. humidity |
| 7. a. Argon | 8. a. rises up |
| B. 1. troposphere | 2. Nitrogen |
| 3. atmosphere | 4. higher |
| 5. filtration | |
| C. To be done by the student | |

II. Short Answer Questions.

1. Different layers of the Earth's atmosphere are troposphere, stratosphere, mesosphere, thermosphere and exosphere.
2. Ozone layer absorbs the harmful ultraviolet rays of the Sun.
3. When the sediments settle down in the dirty water, the clear water is gently poured down into another container without disturbing the sediments at the bottom. This process is called decantation.
4. Different steps involved in water treatment are coagulation (loading), sedimentation, filtration and chlorination.

5. Sometimes, water contains mud which is insoluble. If the water is allowed to stand undisturbed for some time, the mud particles settle down. This process is called sedimentation.

Coagulation is a process in which alum and some other chemicals are added to the water to attract dirt particles and form clumps.

III. Long Answer Questions.

1. Thermosphere is the fourth layer of the atmosphere. Space shuttles orbit in this layer. We can listen to radio programmes because of the ionosphere layer, which is a part of thermosphere.
2. Properties of air:
 - a. Air is colourless, tasteless and odourless. We cannot see air. It has no colour. Pure air is also without any taste or smell.
 - b. Air occupies space.
 - c. Air has weight.
 - d. Air exerts pressure. Anything that has weight applies pressure in the downward direction. Since air has weight, it also exerts pressure. However, air pressure acts in all directions.
 - e. Hot air rises up.
 - f. Hot air expands.
3. The atmosphere protects the Earth in the following ways:
 - a. The atmosphere protects the Earth from the coldness of the space by storing the heat energy during the night and helps in maintaining the temperature.
 - b. The atmosphere protects life on the Earth by absorbing harmful ultraviolet radiation of the sun.
 - c. The atmosphere burns off meteoroids and prevents them from hitting the Earth.
 - d. Air is the carrier of sound waves. It is due to the atmosphere that people can talk and hear each other.
4. A method of purifying water is to pass it through a muslin cloth or filter paper. Here, a filter paper acts like a strainer. It allows the water to pass through it but holds back the insoluble particles. A circular piece of filter paper is taken, a folded into a cone and placed in a funnel. The water along with its impurities is gently poured into the funnel with the help of a glass rod. The insoluble particles settle on top of the filter paper and the clear water is collected in a container, kept below the funnel. This way the insoluble impurities are removed from water by filtration method. The simple

process at home while making coffee or tea requires filtration. (For diagram, refer to textbook.)

5. During water purification, even after filtration, clear water may still contain germs. So, chlorine gas is passed through it to kill the germs. This water is then stored in a water tank at a higher level. As water always flows from a higher level to a lower level, it is distributed to various localities in the city.
6. The process of purifying water by first boiling it and then condensing the steam is called distillation. It involves two processes—evaporation and condensation. This method is used to separate soluble impurities from water. Impure water is heated till it boils. On boiling, water evaporates leaving impurities behind in the flask. The steam is passed through a condenser which is kept cool by circulating cold water around it. The steam cools down in the cool condenser and changes into water. This water is collected in another flask. This water is absolutely pure. This distilled water is used in cars, batteries, inverters, science laboratories and in making medicines too.

7. Aim: To show that air exerts pressure in downward direction.

Procedure: Take a plastic bottle. Take a pin and pierce a small hole near its bottom. Put a piece of tape over the hole. Fill the bottle with water.

- a. Close the cap and remove the tape.
- b. Now, seal the hole and fill the bottle. Without closing the cap, remove the tape.

Observation and Conclusion: In the first case, the water does not flow out of the hole. In the second case, the water flows out of the hole because of the pressure exerted by air.

8.
 - a. TROPOSPHERE: closest to the surface of the Earth
 - b. IONOSPHERE: radio programmes are heard because of this
 - c. MESOSPHERE: meteoroids burn here
 - d. STRATOSPHERE: this layer contains ozone
 - e. EXOSPHERE: this is the outer space

Enrichment Activities

I. HOTS

- A. No, it is not the right action because uncovered water will again mix up with germs and unwanted materials.
- B. If there is no ionosphere, we will not be able to listen to radio programmes.
- C. Burning of fire crackers pollutes the air with harmful gases, and hence, we feel difficulty in breathing.