CHAPTER – 7

EXPERIMENTS WITH WATER

2MARK QUESTIONS

1. Ayesha put a puffed puri in a bowl of water. Would it sink or float?

ANSWER:

When puffed puri is put in a bowl of water, it floats.

2. You put a steel plate on water. Would it sink or float? What would happen to a spoon?

ANSWER:

If you place a steel plate on the water carefully, it will float. When you put the spoon in the water, it sinks.

3. Would the cap of a plastic bottle sink or float on water?

ANSWER:

The cap of a plastic bottle floats when put in the water since it is plastic.

4. Have you seen that some things float on water while others sink? Think how this happens!

ANSWER:

It is observed that a few things float and a few sink in the water. If the item put in the water is lighter, it floats. If it is heavier, it sinks. It depends upon the volume of the item.

5. Suggest some ways for Hamid to quickly dissolve sugar

ANSWER:

To dissolve sugar quickly, Hamid can follow these methods:

- Continuously stirring the mixture.
- On low flame stirring the mixture.

6. Could you see the salt after it dissolved in water? If no, why?

ANSWER:

Salt, when dissolved in water, cannot be seen since it is soluble in nature.

7. Does that mean that now the water does not have salt? If it has, then where is the salt?

ANSWER:

Salt being dissolved in the water doesn't mean the water does not have salt.

8. What difference did you see – in the water with salt, and the water with chalk powder – after keeping for some time?

ANSWER:

Salt, when dissolved in water, makes the water look transparent. Chalk powder doesn't dissolve in water; instead, it settles down at the bottom of the water.

9. Which of the two would you be able to separate from the water by straining with a cloth – salt or chalk powder?

ANSWER:

We can separate chalk powder by straining it with a cloth since it doesn't get dissolve. Salt gets dissolved in water hence we cannot strain it.

10. Do you think the oil got dissolved in the water? Why do you think so?

ANSWER:

No, the oil doesn’t get dissolved in water. It just floats on the water.

5 MARK QUESTIONS

1. What things do you put in water to make tea? Which of those things dissolves in water?

ANSWER:

To prepare tea, we need to add sugar, tea powder, and milk to the water. Milk and sugar get dissolved in water while the tea powder settles down at the bottom later. By using a strainer, we can obtain tea.

2. You have been given some mishri pieces (lumps of sugar). Suggest some ways to dissolve them quickly.

ANSWER:

Lumps of sugar can be dissolved by adding a small amount of water and putting it on low flame. Lumps of sugar can be crushed into smaller pieces later by adding water to it and could be heated over a flame. Continuous stirring results in dissolving.

3. Elaborate on the experiment with drops of oil on a lid. Discuss Ayesha and Hamid's arguments regarding whether the oil dissolves in water. Relate this to the properties of oil and water.

ANSWER:

Ayesha believes the oil dissolves due to stirring, while Hamid disagrees, noting visible oil drops. Oil does not dissolve in water but forms separate droplets due to differences in their properties, such as density.

4. Discuss the concept of drying by evaporation. Provide examples from the text, such as Ayesha's handkerchief and the incident where Ayesha's mother forgot water on the stove.

ANSWER:

Drying by evaporation involves converting a liquid into vapor. Ayesha drying her handkerchief and the water evaporating on the stove illustrate this process.

5. Connect the story of Dandi March to the concept of making salt from seawater. Discuss the historical significance and the relationship between salt and India's struggle for independence.

ANSWER:

The Dandi March was a protest against British salt laws. Making salt from seawater symbolized defiance against oppressive British policies, showcasing the importance of a common resource and self-sufficiency in the struggle for independence.

6. Describe Ayesha's observations during the cooking of puris. Explain the factors that cause a puri to float or sink in hot oil.

ANSWER:

Ayesha noticed that when puris were put in hot oil, they initially sank to the bottom and then puffed up, floating on the oil. The floating occurs because as the puri puffs up, it traps air inside, making it less dense than the oil, allowing it to float.

7. In the poem, the poet wonders why a wooden boat floats while a needle sinks. Explain the concepts of buoyancy and density in relation to floating and sinking.

ANSWER:

The wooden boat floats because it is less dense than water, while the needle sinks due to its higher density. Buoyancy is the force that allows objects to float; it depends on the object's density compared to the fluid (water in this case).

8. Conduct a thought experiment: What would happen if Ayesha put a puffed puri in a bowl of water? Explain the expected outcome based on the principles of buoyancy.

ANSWER:

If Ayesha puts a puffed puri in a bowl of water, it is likely to float. This is because the puri, having trapped air during puffing, is less dense than water, experiencing buoyant force.

9. Discuss the experiment involving different objects in water. Explain why an iron ship can float while a needle sinks, considering their densities.

ANSWER:

An iron ship can float because it is designed to displace enough water to create a buoyant force greater than its weight. The needle sinks due to its high density compared to water.

10. Explain why the soap case, even with soap inside, continues to float in water. Relate this to the concept of density.

ANSWER:

The soap case continues to float because the combined density of the soap and the case is still less than that of the water. Density is the measure of mass per unit volume, and objects with lower density than water will float.

FILL IN THE BLANKS

1. Ayesha's favorite food is _____ and spicy potatoes**. (puri)**

2. In the experiment with water, the iron nail _____ while the empty bowl _____. **(Katori)** I think this happened because _____. **(sank, floated, the nail is denser than water, and the bowl is less dense)**

3. The _____ plastic bottle floats on water. The bottle filled with water _____ because _____. **(empty, sinks, it is denser than water when filled)**

4. Ayesha put too much _____ in the water while boiling eggs, causing them to start floating. **(salt)**

5. The Dead Sea is extremely salty, with _____ grams of salt in one liter of water. **(300)**

6. In the experiment with drops of oil, Ayesha and Hamid had an argument about whether the oil _____ in water. Ayesha thought it did due to _____, while Hamid disagreed, noting visible oil _____. **(dissolved, stirring, drops)**

7. The Dandi March, led by Gandhiji, protested against British laws that restricted the _____ of salt. **(making)**

8. Ayesha's mother put water to boil for making tea, but she forgot about it, and when she checked, there was very little water left in the pan due to _____. **(evaporation)**

9. In the experiment involving dissolving substances in water, chalk powder partially _____, while soil _____ at the bottom. **(dissolves, settles)**

10. Making salt from seawater was a symbolic act during the Dandi March, representing defiance against oppressive British salt laws and advocating for _____. **(self-sufficiency)**

MULTIPLE CHOICE QUESTIONS

1. What is Ayesha's favorite food?

a) Pasta

b) Pizza

c) Puri

d) Sandwich

Answer: c) Puri

2. During the experiment with water, what happens to the iron nail?

a) It floats

b) It dissolves

c) It sinks

d) It changes color

Answer: c) It sinks

3. Why does the empty plastic bottle float on water?

a) It is made of plastic

b) It is filled with air

c) It is less dense than water

d) It is heavier than water

Answer: c) It is less dense than water

4. What did Ayesha put too much of in the water while boiling eggs?

a) Sugar

b) Salt

c) Oil

d) Vinegar

Answer: b) Salt

5. How many grams of salt is mentioned in one litre of water in the Dead Sea?

a) 100 grams

b) 200 grams

c) 300 grams

d) 400 grams

Answer: c) 300 grams

6. In the experiment with drops of oil, why does Ayesha think the oil dissolves in water?

a) Due to evaporation

b) Due to stirring

c) Due to freezing

d) Due to heating

Answer: b) Due to stirring

7. What did the Dandi March protest against?

a) Water scarcity

b) Salt laws imposed by the British

c) Sugar taxation

d) Cotton production

Answer: b) Salt laws imposed by the British

8. Why did Ayesha's mother find very little water left in the pan when boiling water for tea?

a) The water evaporated

b) She forgot to add water

c) The water froze

d) The water dissolved

Answer: a) The water evaporated

9. In the experiment involving dissolving substances in water, what happens to chalk powder?

a) It dissolves completely

b) It does not dissolve at all

c) It partially dissolves

d) It turns into gas

Answer: c) It partially dissolves

10. During the Dandi March, making salt from seawater symbolized:

a) Opposition to tea consumption

b) A protest against sugarcane cultivation

c) Defiance against oppressive salt laws

d) A demand for more water

Answer: c) Defiance against oppressive salt laws

SUMMARY

The story "Experiments with Water" revolves around Ayesha's curiosity and exploration of various water-related phenomena. Ayesha, while waiting for her favorite meal of puri and spicy potatoes, observes the cooking process and notices how the puri float after puffing up in hot oil. Intrigued by floating and sinking, she conducts experiments with objects in water, discovering that some items, like an iron nail, sink, while others, like an empty plastic bottle, float. Ayesha and her cousin Hamid engage in experiments to understand the factors influencing floating and sinking.

The narrative also touches on the properties of materials in water, with Ayesha experimenting with soap and observing its ability to float even when placed in water. The story introduces simple scientific concepts like buoyancy and density in a child-friendly manner. The text also explores solubility through experiments with different substances, including salt, chalk powder, and oil. Ayesha's experiences lead to questions about why certain things float or sink, fostering a sense of scientific curiosity.

The narrative includes historical elements, mentioning the Dandi March and the symbolic act of making salt from seawater during India's struggle for independence. Overall, the story blends scientific exploration with real-life experiences, encouraging young readers to think critically about everyday phenomena.