CLASS 5 EVS - NEW SYLLABUS (OUR WONDROUS WORLD)
CHAPTER 1: WATER — THE ESSENCE OF LIFE
HIGH-ORDER THINKING SKILLS (HOTS) & LOGICAL WORKSHEET

Q1. Deepa kept an open glass bowl filled with water on her terrace on a hot sunny afternoon. Her friend Sneha kept an identical glass bowl with the same amount of water on the kitchen counter indoors. Which bowl will show a faster decrease in the water level by evening, and what natural process explains this difference?

Q2. Imagine you are given a mixture of clean sand and water in a beaker. You want to separate them completely so that you can reuse both the clean water and the dry sand. What simple steps can you perform in your classroom lab to achieve this separation?

Q3. A builder is planning to construct a new residential colony. He can choose between two options for the parking areas:
- Option A: Cover the entire ground with solid concrete and interlocking tiles.
- Option B: Use perforated hollow tiles that allow grass to grow through them.
From an environmental perspective of recharging groundwater, which option should the builder choose and why?

Q4. Ravi is observing water droplets forming on the outside surface of a steel tumbler filled with ice-cold water. His younger brother argues that water is leaking from inside the tumbler through the metal. How can Ravi logically disprove his brother's argument by explaining where the water came from?

Q5. Nearly 71% of our Earth's surface is covered with water, yet we frequently read headlines about extreme water crises and droughts in cities worldwide. Explain the logical contradiction behind why we face water scarcity despite having an abundance of water on the planet.

Q6. During a field trip, a group of students observed a village called Hiware Bazar which manages to remain "water-positive" even during dry summers by using rainwater harvesting. If a neighbouring village experiences severe water shortages despite getting the exact same rainfall, what does this tell us about the role of local communities in managing water resources?

Q7. Rahul takes a clear plastic zip-lock bag, pours a little blue-coloured water into it, seals it tightly, and tapes it to a sunny classroom window. After a few hours, he notices clear, uncoloured water droplets clinging to the top inside of the bag. Why did the blue colour not travel up with the water droplets?

Q8. Suppose a small pond in a forest is heavily contaminated with oil spilled from a broken machine, forming a thick layer over the water surface. How will this layer of oil impact the water cycle processes (like evaporation) and the aquatic life living underneath the pond surface?

Q9. A scientist takes a transparent glass cup, fills half of it with dry garden soil, and slowly pours water onto it with a spoon. As the water sinks into the soil, tiny air bubbles immediately rise to the surface. What logical conclusion can be drawn about the composition of soil from this experiment?

Q10. If all glaciers and ice caps on the tall mountains melt completely due to global warming, it will temporarily increase the water flow in rivers but eventually lead to a massive freshwater shortage for humans. Why will the permanent melting of glaciers cause a freshwater scarcity in the long run?

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ANSWER KEY & EVALUATION GUIDE (FOR TEACHERS)

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Ans 1: The bowl on the terrace will show a faster decrease in water level. The heat from direct sunlight and moving air accelerates the process of evaporation, turning liquid water into water vapour much quicker than indoors.

Ans 2: First, use Sedimentation and Decantation: let the sand settle at the bottom and gently pour out the clear water into another beaker. Second, filter the remaining wet sand using a filter paper/cloth. Finally, leave the sand in the sun to dry completely, returning it to its original dry form.

Ans 3: The builder should choose Option B. Solid concrete blocks water from sinking into the earth, leading to surface runoff. Perforated tiles allow rainwater to soak directly through the soil gaps, successfully recharging the local groundwater table.

Ans 4: Ravi can explain that the steel tumbler is completely waterproof and cannot leak. The cold surface of the tumbler cools down the invisible water vapour present in the surrounding air. This causes the gas to change into liquid water droplets through the process of Condensation.

Ans 5: Out of the 71% water on Earth, about 97% is salty ocean water which is unfit for drinking or farming. Most of the remaining freshwater is locked up as ice in glaciers. Thus, only a very tiny fraction of Earth's water is easily accessible freshwater, which causes scarcity if mismanaged.

Ans 6: It proves that water availability does not just depend on natural rainfall, but heavily relies on proper water-shed management, conservation, and active participation by the community to trap and store water rather than allowing it to wastefully run away.

Ans 7: When water evaporates due to the sun's heat, only the pure water molecules turn into gas (water vapour) and rise. Impurities, dyes, and dissolved salts cannot evaporate at that temperature and are left behind at the bottom, which is why the condensed droplets are clear.

Ans 8: The oil layer blocks sunlight and air, drastically cutting down the rate of evaporation from the pond. It also stops oxygen from dissolving into the water from the atmosphere, causing fish and aquatic plants to suffocate and die.

Ans 9: The experiment proves that dry soil is not entirely solid; it contains tiny, empty spaces filled with air trapped between the soil particles. When water fills these spaces, it pushes the trapped air out, which escapes as bubbles.

Ans 10: Glaciers act as natural freshwater storehouses that slowly melt over the summer, providing a continuous, steady supply of water to major rivers throughout the year. If they melt completely, rivers will initially flood and then eventually dry up during non-rainy seasons, cutting off freshwater.