10. WATER AND ITS PROPERTIES

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TEACHING TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. What happens to water when you heat it up?
   A) It turns into ice
   B)It stays liquid
   C)It turns into steam
   D)It evaporates

Key: C

Explanation: When water is heated to 100°C, it boils and changes into steam, which is water in gas form.

2. Why is water important for life?
   A) It makes things colorful
   B)It helps things grow
   C)It cools down the weather
   D)It changes the taste of food

Key: B

Explanation: All living things need water to survive. It helps plants grow and is essential for animals and humans.

3. What happens when an object is floating in water?
   A) It sinks to the bottom
   B)It stays on the surface
   C)It evaporates
   D)It changes color

Key: B

Explanation: An object floats when it is lighter than the water it pushes aside. It stays on the surface.

4. Why does a heavy stone sink in water?
   A) Because it is light
   B)Because it is pushed up by the water
   C)Because it is heavy
   D)Because it is made of rubber

Key: C

Explanation: A heavy stone sinks because its weight is greater than the upward push (buoyant force) of the water.

5. How do insoluble impurities behave in a liquid?
   A) They mix well and disappear
   B)They settle at the bottom or float around
   C)They turn into a gas
   D)They evaporate

Key: B

Explanation: Insoluble impurities do not dissolve. They either sink to the bottom or remain suspended in the water.

6. What is an example of an insoluble impurity?
   A) Sugar
   B)Salt
   C)Sand
   D)Lemon juice

Key: C

Explanation: Sand does not dissolve in water. You can see the sand particles separate from the water.

7. What happens to the mud during sedimentation?
   A) It floats on top
   B)It gets mixed with the water
   C)It sinks to the bottom
   D)It turns into steam

Key: C

Explanation: In sedimentation, heavy impurities like mud settle down at the bottom because they are heavier than water.

8. What does decantation involve?
   A) Mixing dirt with water
   B)Pouring off clean water without disturbing settled dirt
   C)Heating water to make it boil
   D)Adding chemicals to the water

Key: B

Explanation: Decantation is carefully pouring out the clear water from the top after impurities have settled at the bottom.

9. What does a filter do during filtration?
   A) Boils the water
   B)Catches dirt and allows clean water to pass through
   C)Turns water into steam
   D)Adds impurities to the water

Key: B

Explanation: A filter has tiny holes that trap solid impurities but let the clean water pass through.

10. Why is boiling water important?
    A) It removes sand and mud
    B)It cools the water down
    C)It kills germs and bacteria
    D)It changes the water color

Key: C

Explanation: Boiling water raises its temperature high enough to kill harmful germs and bacteria, making it safer to drink.

11. What is the first step in distillation?
    A) Cooling the steam back into water
    B)Filtering the water
    C)Heating the water until it turns into steam
    D)Settling the impurities at the bottom

Key: C

Explanation: Distillation starts by heating water to create steam, leaving impurities behind.

12. How does filtration help clean the water?
    A) By boiling the water
    B)By adding chemicals
    C)By removing small particles through filters
    D)By letting the water sit still

Key: C

Explanation: Filtration physically removes small, solid particles from water by passing it through a filter material.

13. What is added to the water for disinfection?
    A) Alum
    B)Chlorine
    C)Sand
    D)Sugar

Key: B

Explanation: Chlorine is a common chemical added to water to kill remaining germs and bacteria, disinfecting it.

14. How is clean water delivered to homes after it's treated?
    A) By heating it
    B)By adding flavors
    C)Through a network of pipes
    D)By storing it in small bottles

Key: C

Explanation: After treatment, clean water is pumped through a system of underground pipes to reach homes and buildings.

ADVANCED LEVEL

More than One Answer Type

15. Which processes are used to remove solid impurities from water? (Select all that apply)

A) Sedimentation
B)Decantation
C)Boiling
D)Filtration

Key: A, B, D
Explanation: Sedimentation, decantation, and filtration are physical processes that separate solid impurities from water.

16. Which methods are effective for killing germs in water? (Select all that apply)

A) Boiling
B)Filtration
C)Sedimentation
D)Distillation

Key: A, D
Explanation: Boiling and distillation use high heat, which kills germs and bacteria in the water.

Fill In the Blanks

17. _____ don't mix well with a liquid and just stay separate
Key: Insoluble impurities
Explanation: Insoluble impurities, like sand, do not dissolve. They remain as separate particles in the liquid.

18. _____are things that mix really well with a liquid and disappear into it.
Key: Soluble impurities
Explanation: Soluble impurities, like salt, dissolve completely in a liquid and become invisible.

Matching Type

19. Match each water treatment step with its description:

A) Sedimentation	1. Adding a special powder to help dirt clump to gether.
B) Decantation	2. Pouring off clear water from the top after settling.
C) Adding Alum	3. Removing small particles using filters.
D) Filtration	4. Allowing dirt and particles to sink to the bottom.

Key: A–4, B–2, C–1, D–3

Answer the Following Questions

1. Explain methods of removing insoluble impurities

Answer: Methods include sedimentation (letting heavy impurities settle), decantation (pouring off clean water), and filtration (using a filter to trap solids).

These are physical processes that separate solid particles that do not dissolve in water.

2. Explain about the process of getting water to houses
Answer: Key: Water is collected from sources, cleaned at a treatment plant (sedimentation, filtration, disinfection), stored in tanks, and then sent through pipes to homes.
It is a multi-step process to ensure the water is safe and clean before it reaches our taps.

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. What form does water take when you freeze it?
   A)Steam
   B)Ice
   C)Vapor
   D)Gas
Key: B
Explanation: When water cools to 0°C, it freezes and changes from a liquid to a solid, which is ice.

2. What is water in its most common form?
   A) Solid
   B)Gas
   C)Liquid
   D)Steam
Key: C
Explanation: On Earth, water is most commonly found as a liquid in oceans, rivers, and lakes.

3. Why does a rubber duck float on water?
   A) Because it is heavy
   B)Because it is light
   C)Because it is sticky
   D)Because it is wet
Key: B
Explanation: A rubber duck is light and contains air, making it less dense than water, so it floats.

4. What happens to a heavy stone when you drop it into water?
   A) It floats on top
   B)It stays on the surface

C)It sinks to the bottom
D)It turns into steam

Key: C

Explanation: A stone is dense and heavy. It sinks because it is denser than water.

5. What happens to soluble impurities when they are mixed with a liquid?
A) They settle at the bottom
B)They float on top
C)They mix well and disappear
D)They turn into a gas

Key: C

Explanation: Soluble impurities, like sugar, dissolve completely in the liquid. They mix in and become invisible.

6. What is an example of a soluble impurity?
A) Sand
B)Sugar
C)Rocks
D)Leaves

Key: B

Explanation: Sugar is a soluble impurity. It dissolves in water and you cannot see the particles anymore.

7. What stays on top during sedimentation?
A) The mud
B)The dirt
C)The clean water
D)The steam

Key: C

Explanation: During sedimentation, heavy particles sink. The clearer, cleaner water remains on top.

8. How does decantation help in cleaning water?
A) By adding alum to the water
B)By heating the water
C)By carefully pouring off the clean water from the top
D)By using a strainer

Key: C

Explanation: Decantation separates clean water from settled impurities by gently pouring the top water into another container.

9. Which process uses a strainer or sieve to clean water?
A) Sedimentation
B)Decantation
C)Filtration
D)Boiling

Key: C

Explanation: Filtration uses a strainer, filter paper, or cloth with small holes to separate solids from liquids.

10. What is left behind after distillation?
    A) Clean water
    B)Dirt and impurities
    C)Sand
    D)Germs and bacteria

Key: B

Explanation: In distillation, water is boiled into steam and then cooled back to liquid. Impurities are left behind in the original container.

11. Which method is best for removing germs from water?
    A) Sedimentation
    B)Decantation
    C)Filtration
    D)Boiling

Key: D

Explanation: Boiling water is a very effective way to kill most germs and bacteria, making it safe to drink.

12. What is the purpose of sedimentation in water treatment?
    A) To add flavor to the water
    B)To remove heavy dirt and particles
    C)To cool down the water
    D)To turn water into steam

Key: B

Explanation: Sedimentation allows heavy, solid impurities to settle at the bottom by gravity, removing them from the water.

13. What happens during decantation?
    A) The water is filtered through a special cloth
    B)The clear water is poured off, leaving dirt behind
    C)The water is heated until it boils
    D)Alum is added to the water

Key: B

Explanation: Decantation is the process of separating clear liquid from settled solid sediment by pouring.

14. What does alum do in the water treatment process?
    A) It cools the water
    B)It helps tiny bits of dirt clump together
    C)It adds color to the water
    D)It removes large particles

Key: B

Explanation: Alum is a chemical that makes very small, suspended dirt particles stick together into larger clumps that can settle out.

ADVANCED LEVEL

More than One Answer Type

15. Which steps in water treatment help in making the water clear of particles? (Select all that apply)

A) Decantation
B)Filtration
C)Distillation
D)Adding Alum

Key: A, B, D
Explanation: Decantation removes settled solids, filtration traps particles, and adding alum helps particles clump together and settle.

16. Which of the following processes involves heating water? (Select all that apply)

A) Boiling
B)Sedimentation
C)Distillation
D)Filtration

Key: A, C
Explanation: Boiling heats water to kill germs. Distillation heats water to turn it into steam for purification.

Fill In the Blanks

17. _____ is when something stays on top of the water and doesn't go under
Key: Floating
Explanation: An object floats if it is less dense than water. It remains on the surface.

18. _____ is when something goes down and stays under the water.
Key: Sinking
Explanation: An object sinks if it is denser than water. It goes to the bottom.

Matching Type

19. Match each part of the water supply process with its function:

A) Collecting Water	1. Water travels through pipes to reach homes and schools.
B) Cleaning the Water	2. Water is collected from rivers, lakes, or under ground sources.
C) Storing the Water	3. Water is stored in tanks or reservoirs for future use.
D) Sending Water to Homes	4. Water is treated and purified through various steps.

Key: A–2, B–4, C–3, D–1

Answer the Following Questions

1. What is meant by floating and sinking

Answer: Floating means an object stays on the water's surface. Sinking means an

object goes below the surface to the bottom.
Whether an object floats or sinks depends on its density compared to water.

2. What is meant by soluble and insoluble impurities?
Answer: Soluble impurities dissolve in water (e.g., salt). Insoluble impurities do not dissolve and remain separate (e.g., sand).
Soluble impurities mix completely, while insoluble ones can be seen and separated physically.