Changes Around Us (KEY)

TEACHING TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. b) A change that can be undone.
A reversible change is one that can be reversed to restore the original state.

2. b) Melting ice.
Melting ice is a reversible change because it can return to its solid state when frozen again. Burning wood and cooking an egg are irreversible changes.

3. a) Reversible change and c) Physical change.
Folding and unfolding a piece of paper are both reversible and physical changes, as they do not alter the paper's chemical structure.

4. c) The sugar can be separated from the water.
When you dissolve sugar in water, it mixes, but if you evaporate the water, the sugar will remain as a solid.

5. a) A reversible change.
Inflating a balloon and then letting the air out can be reversed; the balloon can be inflated again. It is also a temporary change, but primarily, it's considered reversible.

6. b) Only salt.
When you dissolve salt in water and then evaporate the water, the salt remains behind as a solid.

ADVANCED LEVEL

More than One Answer Type

7. The processes that involve reversible changes are:
a) Mixing salt in water c) Melting chocolate d) Folding a shirt
Growing plants is not typically considered reversible, and baking a cake

is an irreversible change.

Fill In the Blanks
8. Physical change.

9. Physical change, Reversible change

Matching Type
10.
1. Melting ice - B. Returning a solid to its liquid state
2. Dissolving sugar in water - A. Reversing the process of turning a liquid into a gas (Note: This is somewhat misleading, as it primarily involves mixing rather than a phase change. However, this is the best fit in this context.)
3. Evaporating water - A. Reversing the process of turning a liquid into a gas
4. Inflating a balloon - E. Deflating a balloon
5. Folding a piece of paper - C. Unfolding a paper from its folded state

Answer the Following Questions
11. A reversible change is a change that can be undone or reversed, allowing the material to return to its original state.
Example: Melting ice is a reversible change. When ice melts, it turns into water, but when the water is frozen again, it becomes ice once more.

12. To demonstrate that melting ice is a reversible change, follow these steps:
1. Melt the Ice: Place ice cubes in a bowl at room temperature and observe them as they melt into water.
2. Freeze the Water: After the ice has completely melted, pour the water into a freezer-safe container.
3. Return to Ice: Put the container in the freezer for several hours until the water freezes back into ice.
4. Observe the Result: Take the container out of the freezer and observe that the water has returned to its solid state as ice.
This shows that melting ice is reversible since the process can be undone by freezing the water back into ice.

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. c) Reversible change because:
Reversibility: When you fold a piece of paper, you can easily unfold it back to its original flat shape without any permanent alteration to the paper itself. The paper retains its original properties and structure.
Physical Change: This process involves a physical change, not a chemical change. The paper remains the same material before and after folding.

2. c) Mixing salt and sugar.
This is a reversible change because you can separate the two substances.Boiling an egg and baking a cake are irreversible changes, as they involve chemical transformations that cannot be undone.

3. b) It solidifies back into a solid.
When you cool a liquid, it can lose heat energy and transition back into a solid state.

4. a) The colors cannot be separated.
When you mix different colors of paint, they combine to create a new color, and this mixture cannot be easily separated back into its original individual colors.

5. c) Burning paper.
Burning paper is not a reversible change because it results in a chemical transformation that cannot be undone. Melting chocolate and dissolving sugar in water are both reversible changes.

ADVANCED LEVEL

More than One Answer Type

6. a) Melting ice, c) Folding paper, e) Inflating a balloon, d) Dissolving sugar in water,
b) Burning wood is not a reversible change, as it results in a chemical transformation that cannot be undone.

Fill In the Blanks

7. Physical change, Reversible change

8. Physical change, Reversible change

Matching Type

9.

1. Melting ice - A. Changing a solid into a liquid
2. Dissolving salt - (This doesn't have a perfect match but is typically considered a physical change.)
3. Boiling water - B. Changing a liquid into a gas
4. Condensing steam - C. Changing a gas into a liquid
5. Freezing water - D. Changing a liquid into a solid

E. Changing a gas into a solid, that process is known as deposition, which is not represented in the original list.

Answer the Following Questions

10. Yes, several reversible changes occur in nature. Here are a few examples:

1. Water Cycle: Water evaporates from oceans and lakes, turning into vapor (gas) and then condenses back into liquid water when it cools in the atmosphere, forming clouds. This process can repeat indefinitely.
2. Melting and Freezing: Ice melting into water during warm weather and then freezing back into ice when temperatures drop is a common natural reversible change.
3. Photosynthesis: Plants absorb carbon dioxide and sunlight to produce glucose and oxygen. This process can be reversed when animals (including humans) breathe in oxygen and release carbon dioxide through respiration.
4. Seasonal Changes: In autumn, trees lose their leaves (a reversible change as they can grow back in spring).

These examples show how reversible changes are fundamental to many natural processes, contributing to ecological balance and the cycle of matter in the environment.

11.

1. Resource Conservation: Knowing which changes are reversible helps us use resources efficiently. For example, understanding that water can be reused through evaporation and condensation can encourage sus-

tainable water management.
2. Safety and Decision-Making: In cooking, knowing which processes are reversible (like melting butter) versus irreversible (like baking a cake) can guide better decisions in food preparation.
3. Environmental Awareness: Recognizing reversible changes in nature, such as the water cycle, can foster a deeper appreciation for ecological systems and the importance of preserving them.
4. Scientific Understanding: Understanding these concepts forms the foundation for learning about more complex scientific principles, which can enhance problem-solving and critical thinking skills.
5. Practical Applications: Many industries, like recycling and manufacturing, rely on reversible processes. Understanding these can lead to innovations in product design and waste reduction.
Overall, grasping the concept of reversible changes can lead to more informed choices, better resource management, and a greater understanding of our environment.

IRREVERSIBLE CHANGES (KEY)

TEACHING TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. A) They turn into cookies.
When you mix flour, sugar, and eggs together and bake them, the ingredients undergo a chemical change and transform into cookies.

2. D) It can't be put back together.
When you cut a piece of paper into smaller pieces, it remains paper (stays the same in terms of material), but it cannot be restored to its original form. This makes it an irreversible change.

3. B) It turns into water.
When you leave an ice cube out at room temperature, it melts and transforms into water.

4. C) They turn into a new color.
When you mix different colors of paint together, they combine to create a

new color.
5. D) It gets moldy.
When you leave a piece of bread out for a long time, it can develop mold due to exposure to air and moisture.

6. C) It can't be put back together.
When you rip a piece of paper into small pieces, it remains paper but cannot be restored to its original form.

7. C) It turns into dough.
When you mix flour and water together and let it sit, it forms a dough as the flour absorbs the water.

8. C) The sugar dissolves in the water.
When you pour water onto a pile of sugar, the sugar dissolves, forming a sugar solution.

ADVANCED LEVEL

More than One Answer Type

9. The irreversible changes that happen to food from the list are:
A) Boiling an egg, B) Rotting of fruits
C) Chopping vegetables can be considered reversible in that you can combine the pieces back, but it's often viewed as an irreversible change in practical terms.
D) Freezing milk and E) Mixing flour and water are both reversible changes.

Fill In the Blanks

10. A chemical change
11. Irreversible
12. Water

Matching Type

13.
1. Burning wood - C. Change in the arrangement of molecules leading to a permanent alteration
2. Rotting of fruits - A. Biological process resulting in decomposition
3. Cooking an egg - B. Proteins get denatured

Answer the Following Questions

14. An example of an irreversible change that happens in the kitchen is baking a cake. When the ingredients are mixed and baked, they undergo a chemical transformation that changes their structure and composition. Once baked, the cake cannot be returned to its original ingredients, making it an irreversible change.

15. Rusting demonstrates an irreversible change because it involves a chemical reaction between iron, oxygen, and moisture, resulting in the formation of iron oxide (rust). This process permanently alters the structure and properties of the original iron. Once rust forms, you cannot return the rusted material to its original, unoxidized state through simple means. The original iron is lost, and the change cannot be undone, making rusting an example of an irreversible change.

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. C) It rots.
When you leave a piece of fruit out for a long time, it undergoes decomposition and can rot.

2. D) It can't be put back together.
When you melt a crayon by holding it over a flame, it undergoes a physical change and becomes a liquid, but once it cools and hardens again, it cannot be returned to its original shape without remolding.

3. C) They create bubbles and fizz. When you mix vinegar and baking soda together, a chemical reaction occurs that produces carbon dioxide gas, resulting in bubbling and fizzing.

4. C) It turns into ash.
When you burn a piece of wood, it undergoes a chemical reaction and transforms into ash, along with gases and smoke, indicating that it has changed into different substances.

5. C) It turns into juice.

When you squeeze an orange, the juice is extracted from the fruit, transforming it into orange juice.

6. B) It melts into liquid.
When you leave a bowl of ice cream out for a long time, it warms up and melts, turning into a liquid.

7. C) It grows into a plant.
When you plant a seed and water it regularly, it germinates and grows into a plant.

ADVANCED LEVEL

More than One Answer Type

8. The examples of irreversible changes from the list are:
B) Burning a piece of paper (this creates ash and gases that cannot be returned to the original paper
The other options are reversible changes:
A) Mixing salt and sugar (you can separate them)
C) Freezing water into ice (you can melt it back to water)
D) Squeezing an orange for juice (you cannot return it to its original state)
E) Cutting a cake into slices (you can combine the pieces back, although it's often viewed as practically irreversible in terms of serving).
So, only B) Burning a piece of paper is an irreversible change.

Fill In the Blanks

9. Irreversible chnage
10. Irreversible chnage

Matching Type

11.
1. Rust - B. iron oxide
2. Aging - C. Wrinkles forming on the skin
3. Decomposition - A. Rotting of fruits and vegetables

Answer the Following Questions

12. An irreversible change is a process that results in the transformation of a substance into a different state or form, such that it cannot be re-

turned to its original condition. In other words, once the change has occurred, the original material is lost or permanently altered. Examples include burning wood, cooking an egg, or rusting iron. These changes involve chemical reactions or physical transformations that are not easily reversible.

13. Cutting a piece of paper into smaller pieces is considered an irreversible change because, although the material itself remains paper, the original intact form cannot be restored. Once the paper is cut, it is permanently altered in shape and size, and you cannot seamlessly reassemble the pieces into the original sheet without leaving marks or changes. This loss of the original structure makes it practically impossible to return to the initial state, categorizing it as an irreversible change.

SOLUTIONS (KEY)

TEACHING TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. c) A homogeneous mixture where solute and solvent are evenly distributed at a molecular level.
In a solution, the solute is completely dissolved in the solvent, resulting in a uniform composition.

2. b) The substance that does the dissolving.
In a solution, the solvent is the component that dissolves the solute.

3. d) It is a homogeneous mixture.
In a solution, the solute and solvent are evenly distributed, resulting in a uniform composition throughout.

4. c) A homogeneous mixture of two or more solids.
A solid solution occurs when two or more solids are mixed together in a way that they are uniformly distributed at a molecular level.

5. b) Brass (copper and zinc alloy).
Brass is a solid solution made up of copper and zinc that are mixed together uniformly.

6. d) Aqueous solution.
When sugar is dissolved in water, it forms an aqueous solution, where water is the solvent.

7. b) Sand in water.
Sand does not dissolve in water, making it an example of an insoluble substance.

8. b) Oxygen gas dissolved in water.
This is an example of a gas solution, where oxygen is the gas that is dissolved in the liquid water.

ADVANCED LEVEL

More than One Answer Type

9. The examples of liquid solutions from the list are:
a) Salt dissolved in water, b) Alcohol mixed with water, d) Carbon dioxide dissolved in water.
c) Oil mixed with water is not a liquid solution because oil and water do not mix uniformly; they form separate layers instead.

Fill In the Blanks

10. Homogeneous
11. Solute, Solvent.
12. Solute, Solvent.

Matching Type

13.
1. Solution - a. A homogeneous mixture
2. Solvent - b. The substance that does the dissolving
3. Solute - c. The substance being dissolved
4. Liquid solution - d. A mixture where solute and solvent are evenly distributed at a molecular level

Answer the Following Questions

14. A solution is a homogeneous mixture composed of two or more substances, where one substance (the solute) is uniformly dissolved in another substance (the solvent). In a solution, the components are evenly distributed at a molecular level, resulting in a single phase.
Example: Saltwater is a common example of a solution. In this case, salt (the solute) is dissolved in water (the solvent), creating a uniform mixture that is clear and consistent throughout.

15. In a solution, the solute is the substance that is dissolved, while the solvent is the substance that does the dissolving.
Key Differences:
1. Role: Solute: The solute is typically present in a smaller amount and is the substance that is dissolved in the solvent. Solvent: The solvent is usually present in a larger amount and serves as the medium in which the solute is dissolved.
2. Physical State: The solute can be a solid, liquid, or gas, while the solvent is often a liquid (most commonly water), although it can also be a solid or gas in certain cases.
3. Example in a Solution: In a saltwater solution, salt is the solute, and water is the solvent. The salt dissolves in the water to form a homogeneous mixture.
Overall, the solute and solvent work together to create a solution, but they have distinct roles and characteristics.

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. c) A mixture where solute and solvent are evenly distributed at a molecular level.
This defines a solution as a homogeneous mixture where the components are uniformly mixed.

2. b) Salt in water, d) Vinegar in water
Both salt dissolved in water and vinegar mixed with water form homogeneous liquid solutions.

3. c) Water.
In a solution of carbon dioxide gas dissolved in water, water acts as the solvent.

4. d) Aqueous solution.
When sugar is dissolved in water, it forms an aqueous solution, where water is the solvent.

5. a) The solute and solvent can be separated by filtration.
This is NOT a characteristic of a solution, as the components of a solution cannot be easily separated by filtration. Solutions are homogeneous mixtures where the solute is evenly distributed within the solvent.

6. c) Gas solution.
Air is a gas solution, as it is a mixture of different gases (primarily nitrogen and oxygen) that are evenly distributed.

7. c) A homogeneous mixture of two or more solids.
A solid solution occurs when different solid substances are mixed together uniformly at a molecular level.

ADVANCED LEVEL

More than One Answer Type

8. The types of solutions based on the state of the solute and solvent are:
a) Solid solutions, b) Liquid solutions, c) Gas solutions, d) Aqueous solutions
All of these options apply, as solutions can be formed in solid, liquid, or gas states.

Fill In the Blanks

9. Solvent
10. Solid

Matching Type

11.
1. Saltwater - c) A mixture of salt and water
2. Lemonade - a) A mixture of water and alcohol (assuming lemonade contains alcohol; otherwise, it could also be a mixture of water, sugar,

and lemon juice)
3. Air - d) A mixture of gases like oxygen and nitrogen
4. Sugar water - b) A mixture of sugar and water

Answer the Following Questions

12. A solid solution is a homogeneous mixture where two or more solid substances are combined, and the solute is uniformly distributed within the solvent at a molecular level. In a solid solution, both components remain in the solid state, and the mixture appears consistent throughout.

Examples of Solid Solutions in Everyday Life:

1. Alloys:- Brass: A mixture of copper and zinc used in musical instruments and fittings.- Stainless Steel: An alloy of iron, carbon, and chromium, known for its corrosion resistance and used in kitchenware and appliances.

2. Rock Salt:- A natural solid solution of sodium chloride (halite) mixed with other minerals, commonly used for seasoning food.

3. Glass: - Soda Lime Glass: A solid solution made from silica, soda (sodium carbonate), and lime (calcium oxide), widely used in windows and containers.

4. Concrete: - A mixture of cement, sand, gravel, and water that forms a solid solution when it hardens, essential for construction.

These examples highlight how solid solutions play a crucial role in various materials and products in our daily lives.

13. A liquid solution is a homogeneous mixture in which a solute is dissolved in a solvent, both of which are in a liquid state. In a liquid solution, the solute is distributed evenly throughout the solvent at the molecular level, resulting in a uniform composition.

Characteristics of Liquid Solutions:

- Homogeneity: The components cannot be distinguished and appear as a single phase.

- Molecular Distribution: The solute particles are evenly distributed within the solvent, making the mixture consistent throughout.

- Varied Concentrations: The concentration of the solute can vary, affecting the properties of the solution.

Examples of Common Liquid Solutions:

1. Saltwater:- A mixture of salt (sodium chloride) dissolved in water, commonly found in oceans and used in cooking.

2. Sugar Water:- A solution of sugar dissolved in water, often used in beverages and cooking.

3. Vinegar:- A solution of acetic acid in water, widely used in cooking and as a preservative.

4. Alcoholic Beverages:- Such as wine or beer, which are solutions of ethanol (alcohol) in water along with various other compounds.

5. Soft Drinks: - Carbonated beverages where carbon dioxide gas is dissolved in flavored water, along with sugars and acids.

These examples illustrate the variety of liquid solutions encountered in everyday life, showcasing their importance in cooking, beverages, and food preservation.

MIXTURES (KEY)

TEACHING TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. a) When two or more things are mixed together.
A mixture is formed when two or more substances are combined, and they can be separated by physical means.

2. c) A bowl of fruit salad.
A bowl of fruit salad is a mixture because it contains different fruits that are combined but can be separated. The other options are not mixtures; they are either pure substances or homogeneous.

3. a) They stay the same.
In a mixture, the individual properties of the components remain unchanged; they can still be identified and retain their original characteristics.

4. a) They become one color.
When you mix different colors of paint together, they blend to create a new color.

5. b) By picking out the beads with tweezers.
This method allows you to physically separate the beads from the buttons.

6. b) A sandbox.
A mixture of sand and pebbles is commonly found in a sandbox, where both components are mixed together but retain their individual properties.

7. a) A mixture.
When you mix sugar and water, you get a solution, which is a type of mixture, but the sugar and water retain their individual properties.

ADVANCED LEVEL

More than One Answer Type

8. The examples of mixtures from the list are:
a) A bowl of cereal with milk., c) A jar of marbles., d) A bowl of fruit salad.
b) A glass of pure water is not a mixture; it is a pure substance.

Fill In the Blanks

9. Mixture
10. properties

Matching Type

11.

1. Sand and water mixture - C. A combination of sand and small rocks
2. Fruit salad - D. A mixture of various fruits
3. Bowl of colorful candies - A. A combination of different colored candies
4. LEGO bin - B. A mixture of different LEGO bricks

Answer the Following Questions

12. An example of a mixture you might find in your kitchen is salad dressing. It often consists of oil, vinegar, herbs, and spices mixed together. Each ingredient retains its own properties, and the mixture can be separated into its individual components if left to sit.

13.

1. Components Retain Their Properties: In a mixture, each substance maintains its own physical and chemical properties. For example, in a salad, the lettuce, tomatoes, and cucumbers still taste and look like themselves.
2. Variable Composition: Mixtures can have different proportions of their components. You can add more or less of a substance without changing the overall nature of the mixture.
3. Physical Separation: The components of a mixture can usually be separated by physical means, such as filtering, sorting, or using a magnet.
4. Heterogeneity or Homogeneity: Mixtures can be heterogeneous (not uniform throughout, like a bowl of cereal) or homogeneous (uniform throughout, like saltwater).

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. c) A tree.
A tree is a living organism and not a mixture, while the other options are all mixtures of different components.

2. a) A mixture.
When you mix sand and water together, you get a mixture, as both substances retain their individual properties.

3. a) Lemonade.
A mixture of water and lemon juice is commonly known as lemonade.

4. b) By picking out each color separately.
This method allows you to physically separate the different colored can-

dies from the mixture.
5. b) A bowl of fruit salad.
A bowl of fruit salad is a mixture of different fruits that retains the properties of each individual fruit.

ADVANCED LEVEL

More than One Answer Type
6. The true statements about mixtures are:
a) In a mixture, each substance keeps its own properties.
b) Mixtures can be separated into their original parts.
Statements c and d are not true. Mixtures do not form new substances, and they can consist of two or more substances.

Fill In the Blanks
7. Mixture
8. Mixture

Matching Type
9.
1. Sand and water - d) A mixture of sand and water.

2. Fruit salad - e) A mixture of different fruits chopped and mixed together.

3. Solution - a) A type of mixture where one substance dissolves in another.

4. M&M candies - c) A mixture of different colored candies.

5. Pebbles and sand - b) A combination of sand and small stones.

Answer the Following Questions
10. A mixture is a combination of two or more substances that retain their individual properties and can be physically separated. In a mixture, the components are combined without undergoing a chemical change, meaning they do not form a new substance. Mixtures can be homogeneous (uniform composition, like saltwater) or heterogeneous (distinct components, like a salad). Examples include air, salad, and a bowl of mixed nuts.

11. The difference between a mixture and a solution lies in their composition and properties:

1. Mixture:

- A mixture consists of two or more substances that are combined physically but retain their individual properties.

- The components can often be seen and separated by physical means (e.g., sorting, filtering).

- Mixtures can be homogeneous (uniform throughout, like a fruit salad) or heterogeneous (distinct components, like a bowl of cereal).

2. Solution:

- A solution is a specific type of mixture where one substance (the solute) is completely dissolved in another substance (the solvent).

- Solutions are homogeneous at a molecular level, meaning the solute is evenly distributed throughout the solvent and cannot be seen.

- Common examples include saltwater and sugar dissolved in water.

SEPARATION OF MIXTURES (KEY)

TEACHING TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. a) Filtration.
You can use filtration to separate sand from water, as the sand will be trapped by the filter while the water passes through.

2. b) Magnetic separation.
This method uses a magnet to attract the iron filings, allowing you to easily separate them from the sand, which is non-magnetic.

3. d) Decantation.
Since oil and water do not mix and form separate layers, you can carefully pour off the oil or water to separate them.

4. b) Evaporation.
By heating the mixture, the water will evaporate, leaving the salt behind.

5. c) Picking out each color separately.
This method allows you to physically separate the candies based on their colors.

ADVANCED LEVEL

More than One Answer Type

6. d) Magnetic separation
The method that cannot be used to separate a mixture of sand and water is d) Magnetic separation.Sand is not magnetic, so this method would not effectively separate the components of the mixture.

Fill In the Blanks

7. Filtration
8. Evaporation

Matching Type

9.

1. Sorting - B. Separating a mixture of candies in a bowl.

2. Filtration - A. Separating a mixture of sand and salt by dissolving the salt in water and filtering out the sand.

3. Magnetic Separation - D. Separating a mixture of iron filings and sand by using a magnet to attract the iron filings.

4. Decantation - C. Separating a mixture of iron nails and wood shavings by pouring off the liquid part.

Answer the Following Questions

10. To separate salt from water, you can use the evaporation method. Here's how it works:

1. Heat the Saltwater Mixture: Pour the saltwater into a pot and apply heat.

2. Evaporate the Water: As the water heats up, it will begin to evaporate, turning into steam.

3. Collect the Salt: Eventually, all the water will evaporate, leaving the salt behind as a solid residue.

This method effectively separates the salt from the water, allowing you to recover the salt once all the water has evaporated.

11. Magnets help in separating some mixtures by attracting and removing magnetic materials from non-magnetic ones. Here's how it works:

1. Magnetic Attraction: When a magnet is brought close to a mixture that contains magnetic substances (like iron filings or iron nails), those magnetic materials are attracted to the magnet.

2. Separation Process: By moving the magnet through or over the mixture, the magnetic materials cling to the magnet, allowing you to easily separate them from non-magnetic materials (like sand, wood shavings, or other debris).

3. Efficiency: This method is quick and efficient for separating mixtures where one component is magnetic, making it useful in recycling, construction, and various industrial processes.

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. b) Magnetic separation.
The iron filings are magnetic and will be attracted to a magnet, allowing you to easily separate them from the non-magnetic sand.

2. c) Picking out each component separately.
This manual method is effective since both rice and beans are distinct in size and appearance, making it easy to separate them by hand.

3. b) Evaporation.
By heating the mixture, the water will evaporate, leaving the ink behind as a residue. This method effectively separates the components based on their different boiling points.

4. a) Filtration.

So while filtration is the main method used, evaporation is also part of the process if you want to recover the sugar. Thus, technically, you could say both filtration and evaporation are involved, but the direct answer to the question is a) Filtration.

5. b) By using a magnet to attract one component.
This method is effective for separating magnetic materials (like iron filings) from non-magnetic substances (like sand) in a mixture. The magnet pulls the magnetic component away, allowing for easy separation.

ADVANCED LEVEL

More than One Answer Type
6. d) Magnetic separation.
Magnetic separation is used for separating magnetic materials from non-magnetic ones, but neither salt nor sand is magnetic. The other methods—filtration, evaporation, and decantation—can effectively separate salt from sand in different ways.

Fill In the Blanks
7. Decantation
8. Magnet

Matching Type
9.

1. Filtration - A. Separating sand from water

2. Magnetic Separation - B. Separating iron nails from sand

3. **Hand Picking** - C. Separating grains and nuts

4. Decantation - D. Pouring off the water layer from oil and water mixture

Answer the Following Questions
10. When you pour a mixture of sand and water through a strainer, the strainer allows the water to pass through while trapping the sand. This process separates the two components of the mixture. The sand collects in the strainer, while the water flows out, leaving you with clean water

and sand that can be easily retrieved from the strainer. This method effectively separates solid particles from a liquid, demonstrating a simple filtration process.

11. When you heat a mixture of water and salt, the water begins to evaporate as it reaches its boiling point. The salt, which is soluble in water, remains dissolved until all the water has evaporated. As the water evaporates, you will eventually be left with salt crystals at the bottom of the container. This process is commonly used to separate salt from water and is a practical example of evaporation in action.