Techniques for Separating Mixtures

A. Choose the correct answer:

1. Which technique is used to separate a solid from a liquid in a heterogeneous mixture?

a) Filtration
b) Distillation
c) Chromatography
d) Evaporation

2. Which separation method is based on differences in boiling points?

a) Sieving
b) Sublimation
c) Distillation
d) Filtration

3. Which of the following methods is used to separate a mixture of salt and sand?

a) Filtration followed by evaporation
b) Handpicking
c) Sublimation
d) Chromatography

B. Fill in the Blanks:

1. The process of _____ is used to separate insoluble solids from liquids using a porous barrier.
2. In chromatography, substances are separated based on their different _____ in a solvent.
3. The technique of _____ is used to separate a mixture of two liquids with different boiling points.

C. Case Study:

A laboratory technician was given a mixture containing sand, salt, iron filings, and water. He needed to separate each component using appropriate techniques. He followed these steps:

- Used a magnet to remove iron filings.
- Filtered the mixture to remove sand from the liquid.

- Evaporated the water to obtain salt.

Questions & Answers:

1. Why did the technician use a magnet first in the separation process?
2. Which property of sand allowed it to be separated by filtration?
3. What would be the best way to separate two liquids with different boiling points?
4. Why was evaporation chosen to separate salt from water?

D. Short Answer Questions:

1. What is the principle behind the separation of mixtures?
2. How does filtration work, and where is it commonly used?
3. Why is distillation an effective method for purifying water?

E. Long Answer Questions:

1. Explain different techniques used to separate mixtures, providing real-life examples.
2. Discuss the role of chromatography in scientific research and its applications.
3. Describe how separation techniques are used in industries like oil refining and food processing.