Exploring Mixtures and their Separation: Chapter Introduction

Muddy water settles but milk never does: particle size decides how a mixture behaves. Solutions, colloids and suspensions, and the ways to separate them.

Name: Date: Score: ____ / 18

A. Fill in the blanks

1. A mixture whose particles are too small to see and never settle is a ____.

2. A mixture whose particles are large and settle on standing is a ____.

3. Milk is an example of a ____.

4. Scattering of a light beam by colloid particles is called the ____ effect.

5. Iron filings can be separated from sand using a ____.

B. True or False

6. Air is a mixture. True / False

7. A suspension's particles pass through filter paper. True / False

8. A light beam is visible when passed through a true solution. True / False

9. Colloid particles settle down on standing. True / False

C. Assertion and reason

10. Assertion (A): Milk shows the Tyndall effect.
Reason (R): Milk is a colloid whose particles scatter light.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

11. Assertion (A): Muddy water becomes clear on standing.
Reason (R): Suspension particles are pulled down by gravity.

(a) Both A and R are true, and R explains A
(b) Both A and R are true, but R does not explain A
(c) A is true, R is false
(d) A is false, R is true

Answer: _____

D. Choose the correct option

12. Which is a suspension?

(a) salt water
(b) milk
(c) muddy water
(d) sugar solution

Answer: _____

13. The size of colloid particles is about:

(a) less than 1 nm
(b) 1 to 1000 nm
(c) more than 1000 nm
(d) exactly 1 mm

Answer: _____

14. Coloured components of an ink are best separated by:

(a) filtration
(b) chromatography
(c) magnet
(d) sedimentation

Answer: _____

15. Salt can be recovered from sea water by:

(a) filtration
(b) evaporation
(c) magnet
(d) chromatography

Answer: _____

E. Short answer questions

16. Explain why mud settles but milk does not.

17. Name a method to separate each: sand + water, salt + water, iron + sand, inks.

F. Match the columns

18. Match each item in Column A with the correct item in Column B.

Column A	Column B	Your answer
1. Salt water	(a) Solution	1 → ____
2. Milk	(b) Suspension	2 → ____
3. Muddy water	(c) Colloid	3 → ____
4. Iron + sand	(d) Magnet	4 → ____

Detailed solutions

1. solution

2. suspension

3. colloid

4. Tyndall

5. magnet

6. True. It contains nitrogen, oxygen, argon, carbon dioxide and more.

7. False. They are large enough to be trapped by filter paper.

8. False. Solution particles are too small to scatter light.

9. False. They stay dispersed.

10. (a) R explains A.

11. (a) R explains A.

12. (c) muddy water. Its particles settle.

13. (b) 1 to 1000 nm. Between solutions and suspensions.

14. (b) chromatography. Components travel at different speeds on paper.

15. (b) evaporation. The water evaporates and the salt is left.

16. Mud particles are large (a suspension), so gravity pulls them down. Milk's particles are mid-size (a colloid); they stay dispersed and only scatter light.

17. Sand + water: filtration; salt + water: evaporation; iron + sand: magnet; inks: chromatography.

18. 1 → (a), 2 → (c), 3 → (b), 4 → (d). Each mixture matches its type or separation method.