



Give the marks for the points in the marking scheme; an answer in other words that says the same is right.

1 Key words

1. mixture
2. components
3. homogeneous
4. distillation
5. bottom
6. solute
7. solvent
8. colloids

K • 4

Each carries 0.5 mark.

2 Label the diagram

- | | |
|----------------|-----------------------|
| 1. thermometer | 4. round-bottom flask |
| 2. burner | 5. conical flask |
| 3. condenser | 6. distilled water |

K • 3

Each carries 0.5 mark.

3 Multiple choice

- i. **c. salt water**

K • 1

In salt

water the salt dissolves and spreads evenly; a homogeneous mixture. In the other three, you can see the sand, husk or mud.

- ii. **d. muddy water**

U • 1

In **muddy water** the soil isn't mixed evenly; you can see it, and it settles. The other three are solutions, mixed evenly.

- iii. **b. centrifuging**

U • 1

Centrifuging: spinning the curd fast (churning it with a madani, or in a machine) separates the light butter from the heavier buttermilk.

- iv. **d. chromatography**

A • 1

Chromatography separates the chemicals in a mixture by how fast each is carried along, so they can be identified. (Centrifuging separates blood cells from plasma, but it can't pick out the different dissolved chemicals.)

- v. **a. salt**

K • 1

The **solute** is the substance that dissolves: **salt**. Water, in which it dissolves, is the solvent, and the salt water as a whole is the solution.

4 True or false

MARKING SCHEME

K • 2

- ✓ i. true; ii. false.
- ✓ iii. true; iv. true.

5 Very short answers

- a. MARKING SCHEME

K • 1

- ✓ Two or more substances mixed physically (no new substance formed).



- b. MARKING SCHEME U · 1
✓ Water.
- c. MARKING SCHEME K · 1
✓ Evaporation.

6 Short answers

- a. MARKING SCHEME U · 2
✓ Any one difference, e.g. mixed evenly; not mixed evenly.
✓ Any second difference, e.g. components can't be seen; can be seen, or an example of each.
- b. MARKING SCHEME U · 2
✓ Any one difference, e.g. the solvent dissolves the other; the solute is dissolved.
✓ Any second difference, e.g. usually more; usually less, or an example of each.
- c. MARKING SCHEME U · 2
✓ The liquid carries the colors along the paper, each at its own speed.
✓ So the colors separate (they can't be separated by filtering or centrifuging).
- d. MARKING SCHEME U · 2
✓ Muddy river water.
✓ Its soil is not mixed evenly: it can be seen and settles at the bottom (salt in salt water can't be seen).

7 Long answer

ANSWER

U · 4

Centrifuging separates heavy and light substances in a liquid quickly: spinning very fast pushes the heavier parts to the bottom much faster than leaving the mixture to settle. It is used in dairies to separate cream from milk (and butter from curd), in hospitals and laboratories to separate blood cells from plasma, and in a washing machine to spin water out of clothes.

MARKING SCHEME

- ✓ Spinning fast pushes the heavier parts to the bottom, faster than settling on their own.
- ✓ A first use, e.g. dairies: cream from milk, butter from curd.
- ✓ A second use, e.g. hospitals: blood cells from plasma.
- ✓ A third use, e.g. a washing machine spinning water out of clothes.

8 Think

ANSWER

HA · 2

Use **evaporation**. Pour a little from each glass into two clean, dry spoons or pans (or two clean pieces of glass), and heat them gently, or leave them in the sun, until all the water has gone.

- The one that leaves a **white crust of salt** behind held **salt water**.
- The one that leaves **nothing** behind held **pure water**.

MARKING SCHEME

- ✓ Evaporate a little from each glass (heat it gently or leave it in the sun) until the water has gone.
- ✓ The one that leaves white salt behind was salt water; the one that leaves nothing was pure water.



9 Activity: Solution, colloid or suspension? (Table 9.1)

(not marked)

WHAT STUDENTS SHOULD FIND

Salt water: not seen, light passes straight through, filter paper doesn't separate it: a solution. Milk: not seen, only a little light passes (the beam glows), runs through the filter: a colloid. Muddy water: the bits are seen, light hardly passes, the mud stays on the filter paper: a suspension.

Marks by level	Knowledge	Understanding	Application	Higher ability	Total
Marks	13	15	1	2	31

