2.6 Separating Mixtures and Solutions: 10-minute Pack

Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 An experiment compares the solubility of potassium nitrate at two temperatures. A student dissolves 30 g of potassium nitrate in 100 g of water at 25°C and finds it all dissolves. At 5°C the student dissolves 30 g in 100 g water and 12 g remains undissolved. Use the data to answer the parts.

(a) Calculate the solubility of potassium nitrate at 5°C in g per 100 g water. **(2)**

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(b) Give one conclusion about how temperature affects the solubility of potassium nitrate, using the data. **(2)**

(c) Name one experimental improvement the student could make to reduce random error when measuring how much solid dissolves. **(2)**

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2 Priya mixes sand and salt and then adds water so the salt dissolves. Which method should she use first to separate the sand from the salt solution? Give a short reason for your choice.

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(2)

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Mark scheme · 2.6 Separating Mixtures and Solutions: 10-minute Pack

Question 1

(a) calculate dissolved amount 30 - 12 = 18 g	**M1**
(a) 18 g per 100 g water cao	**A1**

(a) Answer: **18 g per 100 g water**

(b) state that solubility increases with temperature or solubility at 25°C is greater than at 5°C	**M1**
(b) use data to support statement eg 30 g dissolves at 25°C but only 18 g dissolves at 5°C cao	**A1**

(b) Answer: **Solubility increases as temperature increases; 30 g dissolves at 25°C but only 18 g dissolves at 5°C.**

(c) suggestion such as repeat the experiment and take an average, use more accurate balance, ensure constant temperature with a water bath, or use same stirring time	**M1**
(c) brief explanation of how this reduces error eg repeats reduce random variation or water bath keeps temperature constant	**A1**

(c) Answer: **Repeat the experiment and take the average, or use a water bath to keep temperature constant to reduce random error.**

Question 2

filtration named	**M1**
reason that sand is insoluble and will be trapped by the filter leaving the salt solution cao	**A1**

Answer: **Filtration; sand is insoluble and will be left on the filter while the salt passes into the solution**

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