**Mixtures (answers)**

|  |  |
| --- | --- |
| Instructions to students  • You have 50 minutes to complete the test.  • Please answer all questions in the spaces provided.  • There is to be no talking during the test. | Marks  Section I: Multiple-choice questions: 5 marks  Section II: Short-answer questions: 15 marks  Section III: Extended-response questions: 5 marks  Total: 25 marks |

|  |  |
| --- | --- |
| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Score: /25  Grade: % |
| Comments: | |

Section I: Multiple-choice questions

For each question, circle or highlight the correct answer.

|  |  |  |
| --- | --- | --- |
| 1 Centrifugation separates mixtures based on differences in their: | |  |
| A | mass. |
| B | solubility. |
| C | boiling point. |
| D | magnetism. |
| 2 When sugar dissolves in water, the water is known as the: | | |
| A | solution. | |
| B | solute. | |
| C | solvent. | |
| D | suspension. | |
| 3 Muddy water looks murky because: | | |
| A | the mud particles are soluble. | |
| B | the mud is dirty. | |
| C | the mud particles are spread out and suspended in the water. | |
| D | the mud particles have been pulled apart and spread through the water. | |

|  |  |  |
| --- | --- | --- |
| 4 Two students have a mixture of salt, sand and iron filings that they need to separate. The correct sequence of steps for the process is: | | |
|  | | |
| A | add water, evaporation, filtration, magnetic separation. | |
| B | add water, filtration, evaporation, magnetic separation. | |
| C | add water, magnetic separation, filtration, evaporation. | |
| D | magnetic separation, add water, filtration, evaporation. | |
| 5 What word is used to describe how easily a substance dissolves in water? | | |
| A | Mass | | |
| B | Solubility | | |
| C | Chromatography | | |
| D | Density | | |
|  |  | Section I  Total marks:  /5 marks | |

Section II: Short-answer questions

|  |  |
| --- | --- |
| 6 Explain how filtration works, using tea bags as an example. Identify the components that are the filter, the filtrate and residue. | |
| Making a cup of tea with a tea bag and hot water is an example of filtration. | |
| Filtration separates mixtures based on differences in the size of particles (1 mark). In the tea bag example, the filter is the tea bag itself (1 mark). The filter separates the large tea leaves, which is the residue (1 mark), from the smaller water molecules, which make up the filtrate (1 mark). | |
|  | /4 marks |

|  |  |
| --- | --- |
| 7 Provide an example of a solution that is separated by evaporation and identify the property that is used to separate the substance. | |
| Student answers will vary, e.g. salt water. (1 mark) Evaporation separates mixtures based on differences in boiling points (1 mark). | |
|  | /2 marks |
| 8 Explain the three steps needed to fold filter paper correctly. | |
| 1 Fold in half, then in half again, then in half again to get eighths. (1 mark)  2 Unfold and lay it flat. (1 mark)  3 Refold on the creases to get a fluted shape. (1 mark) | |
|  | /3 marks |

|  |  |
| --- | --- |
| 9 Aluminium sulfate is a flocculent added to waste water at a water treatment facility. How do flocculents help separate mixtures? | |
|  | |
| Flocculants cause particles in a suspension to clump together (1 mark). Once clumps are formed, they are more easily separated from the solution by decantation or filtering (1 mark). | |
|  | /2 marks |
| 10 What is the difference between a pure substance and a mixture? Give an example of each. | |
| A pure substance contains only one type of material (1 mark). Examples will vary, e.g. pure water contains only molecules of water (1 mark).  A mixture contains two or more different materials mixed together (1 mark). Examples will vary, e.g. a glass of soft drink is a mixture because it contains water, dissolved carbon dioxide, sugar and flavourings (1 mark). | |
|  | /4 marks |
|  | Section II  Total marks:  /15 marks |

Section III: Extended-response questions

|  |  |
| --- | --- |
| 11 Eric loves drinking hot, sugary lemon drinks. One day he accidentally poured too much sugar into his hot water. Even when he stirred it, he could still see lots of sugar at the bottom of his cup.  Discuss how the amount of sugar added to the hot water affects the concentration of Eric’s’ hot drink. | |
|  | |
| Sugar is a solute (1 mark) which dissolves in the hot water, the solvent (1 mark), to form a solution (1 mark). Less sugar will give a dilute solution, more sugar will give a concentrated solution (1 mark). Eric’s drink has become saturated as no more sugar will dissolve in the hot water (1 mark). | |
|  | /5 marks |
|  | Section III  Total marks:  /5 marks |