Topical Worksheet

Chapter 4 Exploring Diversity with Separation Techniques

Suggested Answer

Section A

1	2	3	4	5
C	**A**	**B**	**A**	**B**

Section B

Qn	Suggested Answers	
1ai	RED02, WHITE07 and Allura	**1**
1aii	RED02	**1**
1bi	2	**1**
1bii	No. RED02, WHITE07 and Allura all contains a component that remained on the starting line indicating that it was not soluble in water.	**2**

2ai	(Simple) Distillation	**1**
2aii	Hexane	**1**
2b	Error 1: The position of the thermometer. Suggestion: Place the bulb of the thermometer at the mouth of the distilling flask before it enters the condenser. This ensures only solutions that are at the boiling point leaves the mixture. Error 2: The movement of water entering and leaving the condenser. Suggestion: Cool water should enter from the bottom and leave from the top. This ensures all the gaseous product vapour is cooled into liquid state distillate.	**4**

3	First, using a **magnet** remove solid **G** from the mixture. Next, add **water** to the mixture to dissolve solids **I**. Then carry out **filtration** to remove solid **H** from the mixture, and dry solid **H** between two pieces of filter paper. Next carry out **distillation** to separate solutions **I** and **J** into distillates. Since solid **I** does not decompose on heating, **evaporate** until dryness to obtain powdered solid **I**. Since solid **J** decomposes on heating, carry out **crystallisation**. Heat the solution until it is **saturated**. Leave the solution to cool for **crystals** of solid **J** to form. **Rinse** the crystals in distilled water and dry between two pieces of **filter paper**. ***Each answer ½ mark.***	**5**

4	**1.** **Add water [1/2]** to the mixture to dissolve solid **P** and **Q**. **2.** Carry out **filtration [1/2]** to obtain **R** as the residue and solution **P** and **Q** as the filtrate. **3.** Carry out **distillation [1/2]** to obtain two separate distillates of solutions **P** and **Q**. **4.** (Since **P** does not decompose on heating,) **heat solution P until dryness [1/2]** to obtain dry powder solid **P**. **5.** (Since Q decomposes on heating,) **heat solution Q until a saturated solution [1/2]** is obtained. **Leave the solution to cool [1/2]**. **6.** **Rinse [1/2]** in distilled water and **dry the crystals between two pieces of filter paper [1/2]**.	**4**