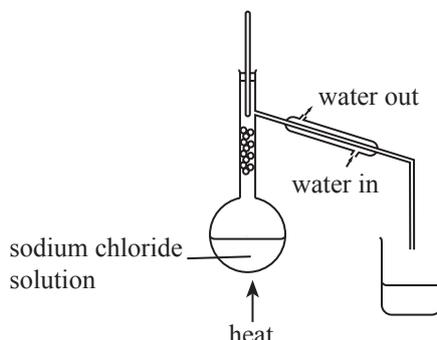


Methods of Purification and Analysis

1. An aqueous solution of sodium chloride is distilled as shown below.



What is the temperature shown by the thermometer and what is left in the distillation flask?

	Thermometer reading/ $^{\circ}\text{C}$	Final content in the distillation flask
A	97	No residue
B	100	White residue
C	103	No residue
D	106	White residue

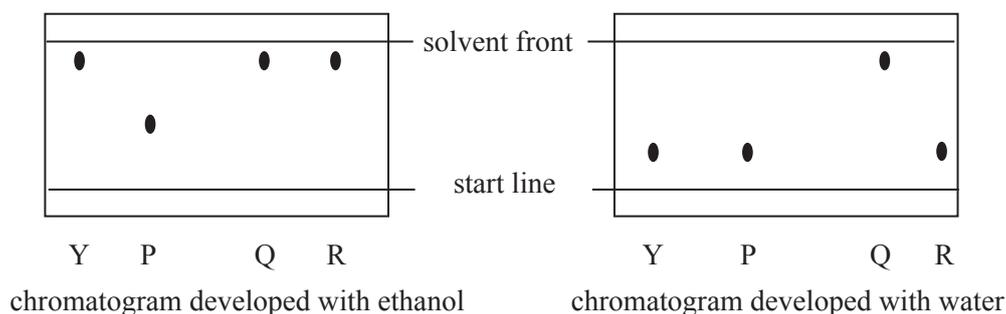
()

2. Separation of substances using paper chromatography depends upon _____.

- A the type of paper used
- B size of container used
- C the colour of the compounds
- D the relative solubility of the compounds

()

3. Substances Y, P, Q and R were analysed using chromatography. The first chromatogram was developed with ethanol and the second with water. The results are shown below.

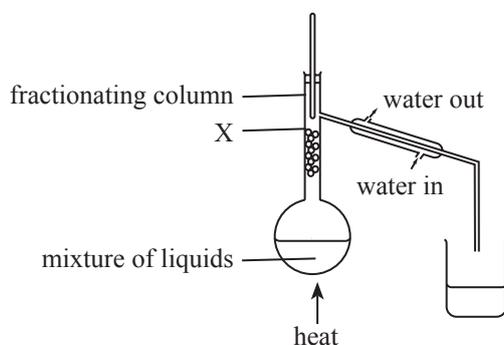


From these chromatograms, we can deduce that _____.

- A substance Y has a higher R_f value in water
- B substance Y has the same melting point as substance P
- C substances P and Q have the same identity
- D substances Y and R have the same solubility in both solvents

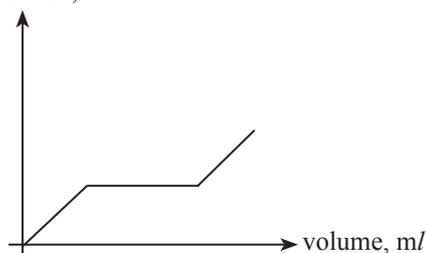
()

4. Paper chromatography is used to separate two substances if both substances _____.
- A have different colours
 B are both liquids at room temperature and pressure
 C can be dissolved using the same solvent
 D have different concentrations ()
5. Food colourings are often found in manufactured foodstuff. Which of the following is the most suitable method for separating these food colourings?
- A Distillation
 B Evaporation
 C Chromatography
 D Crystallisation ()
6. The diagram below shows the apparatus used to separate a mixture of two liquids with different boiling points.

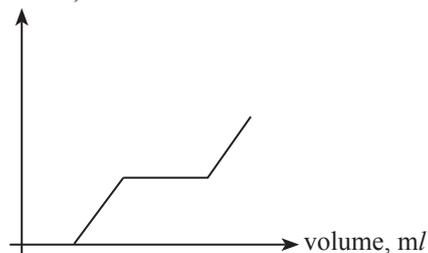


Which of the following graphs would be obtained if the temperature at point X was plotted against the volume of distillate produced?

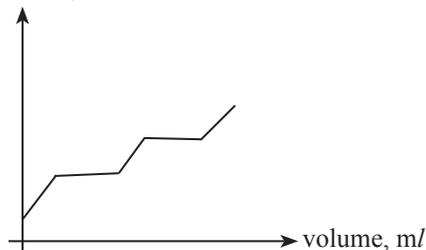
A temperature, °C



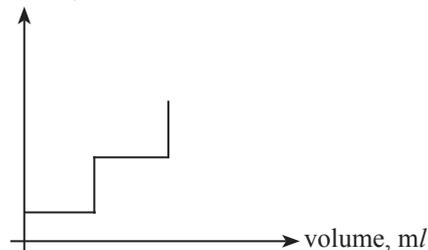
C temperature, °C



B temperature, °C



D temperature, °C



()

1. **B** Since water will be distilled out, the thermometer reading will be 100°C . The salt (a white residue) will be left in the flask.
2. **D** A locating agent can be used for colourless compounds. A substance which is more soluble will have a higher R_f value.
3. **D** Substance Y has a higher R_f value when dissolved in ethanol (eliminate option A). Chromatograms do not indicate the melting or boiling points of substances (eliminate option B). P and Q contain different substances since the R_f values are different in both chromatograms (eliminate option C). Since Y and R have the same R_f values in both chromatograms, they must have the same solubility.
4. **C**
5. **C** Coloured compounds are best separated using chromatography.
6. **D** During distillation, a liquid will be distilled out at its boiling point. Hence, when the temperature is constant, the volume of distillate will increase (horizontal line). Once the first liquid is completely distilled out, the temperature will increase (vertical line).