

$$\text{III} \quad \frac{1.45 \times 10^{-3} \times 5}{2}$$

$$= 3.63 \times 10^{-3} \text{ moles} \quad (1 \text{ mark})$$

$$\text{IV} \quad 3.63 \times 10^{-3} \times 10$$

$$= 3.63 \times 10^{-2} \text{ moles}$$

$$\frac{4.5}{3.63 \times 10^{-2}}$$

$$= 124 \quad (3 \text{ marks})$$

(iii)  $\text{Dx H}_2\text{O}$

$$90 + 18x = 124$$

$$x = \frac{34}{18}$$

$$= 1.9$$

$$\approx 2 \quad (2 \text{ marks})$$

### Observations

### Inferences

2.	Colourless liquid condenses on cool parts of test-tube	Probably Hydrated Salt/compound present	(2 marks)
(a)	White solid remains		
(b)	Colourless filtrate	Compound sparingly soluble	(2 marks)
	White residue		
(i)	Solution turns pink	Compound is basic: $\text{OH}^-$ , $\text{HCO}_3^-$ or $\text{CO}_3^{2-}$ present	(2 marks)
(ii)	No effervescence	$\text{OH}^-$ Present or $\text{HCO}_3^-$ or $\text{CO}_3^{2-}$ Absent	(2 marks)
(iii)	White PPT formed	$\text{Ca}^{2+}$ , $\text{Ba}^{2+}$ , $\text{Pb}^{2+}$ present	(3 marks)
(iv)	No white PPT	$\text{Ba}^{2+}$ Present or $\text{Ca}^{2+}$ or $\text{pb}^{2+}$ Absent.	(2 marks)
3	Burns with luminous (yellow, smoky) flame	Unsaturated compound OR long chain hydrocarbon	(2 marks)
(a)			
(b)	Potassium manganate (VII) is decolourised (changes from purple to colourless)	Alkene or alcohol present	(2 marks)
(c)	Bromine water is decolourised (changes from red to colourless)	Alkene present	(2 marks)