Answer to Question #53100 – Chemistry – Inorganic Chemistry

The moles of chlorine liberated by 79g of potassium permanganate on treatment with potassium chloride in a medium of dilute sulfuric acid:

a) 0.5

b)0.75

c)1

d)1.25

Solution:

$2KMnO_4 + 10KCl + 8H_2SO_4 \rightarrow 6K_2SO_4 + 2MnSO_4 + 5Cl_2 + 8H_2O$

Potassium permanganate, Mr = 158 g/mol

$$n_{KMnO_4} = \frac{79\ g}{158\ g/mol} = 0.5\ mol$$

$$n_{Cl_2} = 5 \times \frac{n_{KMnO_4}}{2} = \frac{5 \times 0.5\ mol}{2} = 1.25\ mol$$

Answer: **d)1.25**