Question 27: A particular acid-rain water has SO_2 . If a 25.00 mL sample of this water requires 35 mL of 0.02 M $KMnO_4$ for its titration, what is the molarity of SO_3^{2-} in acid-rain? $2MnO_4^- + 5SO_3^{2-} + 6H^+ \longrightarrow 5SO_4^{2-} + 2Mn^{2+} + 3H_2O$.

ANSWER: OPTION 1

Meq. of SO_3^{2-} = Meq. of $KMnO_4$

$\therefore N \times 25 = 35 \times 0.02 \times 5$

$N = 0.14$

$\therefore M = 0.14/2 = 0.07$

$S^{4+} \rightarrow S^{6+} + 2e$

$N_{SO_3^{2-}} = 0.14\ N$

$M_{SO_3^{2-}} = 0.14/2 =$ **0.07 M**