

Q.] Which of solution will have pH close to 1.02 [2004]

- (a) 100ml of (M/10) HCl + 100ml of (M/10) NaOH  
(b) 55ml of (M/10) HCl + 45ml of (M/10) NaOH  
(c) 10ml of (M/10) HCl + 90ml (M/10) NaOH  
(d) 75ml of (M/15) HCl + 25ml of (M/5) NaOH

Soln

75 ml of  $\frac{M}{15}$  HCl = 5 mmole of HCl

25 ml of  $\frac{M}{5}$  NaOH = 5 mmole of NaOH.

After Neutralisation 10 mmole of HCl will be remaining in 100ml.

$$\begin{aligned} \Rightarrow \text{Molarity} &= \frac{10}{100} = 0.1 \quad \text{and } \text{pH} = -\log(\text{H}^+) \\ &= -\log 0.1 \\ &= \text{(1)} \end{aligned}$$