SelfStudy.in

10. 3 g of activated charcoal was added to 50 ml of acetic acid solution (0.06N) in a flask. After an hour it was filtered and the strength of the filtrate was found to be 0.042 N. The amount of acetic acid adsorbed (per gram of charcoal) is:

  (1) 18 mg   (2) 38 mg   (3) 42 mg   (4) 54 mg

Answer:

Here because of neutralisation effect strength of acetic acid changed from 0.06 N to 0.42 N.

Therefore no of moles of acetic acid acetic acid absolved

$= 50 \times 10^{-3} \times 0.06 - 50 \times 10^{-3} \times 0.042 = (3 - 2.1) \times 10^{-3} = 0.9 \times 10^{-3} \, moles$

Acetic acid Molecular weight $= CH_3COOH$ = 12+3+12+32+1=60

Weight of acetic acid absorbed = $0.9 \times 10^{-3} \times 60 = 54 \times 10^{-3} gm = 54 \, mg$

In 3 g of charcoal =54 mg absorbed

Therefore the amount of acetic acid adsorbed (per gram of charcoal) is $= \frac{54}{3} = 18 \, mg$

Correct option is (1) 18 mg