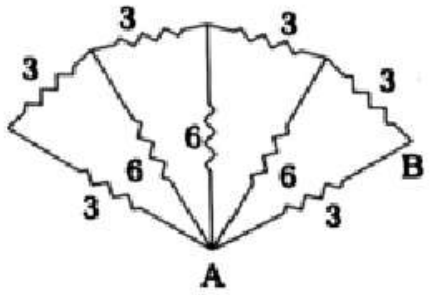
Q 18

. All resistances in the figure are in Ω. Find the effective resistance between the points A and B. (1980)



Sol. In the leftmost loop, two 3 Ω resistors are connected in parallel to one 6 Ω resistor. Effective resistance of this loop is $R = (3+3) \parallel 6 = 6 \parallel 6 = 3\ \Omega$.

Repeat the same process for the next two loops to get the effective resistance of the three loops (from left) as 3 Ω. Thus, the resistance across AB consists of two 3 Ω resistors connected in series and one 3 Ω resistor connected in parallel, giving the effective resistance

$$R_{AB} = (3+3) \parallel 3 = 6 \parallel 3 = 2\ \Omega.$$

Ans. 2 Ω ⊡