

Q.20)	Find the sum to n terms $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots n$ terms.	
Sol.20)	General term of the series is $a_n = \frac{1}{n(n+1)}$ Let $S_n = \frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots \frac{1}{n(n+1)}$ $S_n = \left(\frac{1}{1} - \frac{1}{2}\right) + \left(\frac{1}{2} - \frac{1}{3}\right) + \left(\frac{1}{3} - \frac{1}{4}\right) + \dots \left(\frac{1}{n} - \frac{1}{n+1}\right)$ $S_n = \frac{1}{n} - \frac{1}{n+1}$ $S_n = \frac{n+1-1}{n+1}$ $\therefore S_n = \frac{n}{n+1} \text{ ans.}$	