Que-3: Find the value of $x + \frac{2x}{2!} + \frac{3x}{3!} + \cdots$

Sol: $x + \frac{2x}{2!} + \frac{3x}{3!} + \cdots = \frac{1x}{1!} + \frac{2x}{2} + \frac{3x}{3 \times 2!} + \frac{4x}{4 \times 3!} + \cdots$

$$= x \left(1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \cdots \right)$$

$$= e.x$$