Discrete 1

EE23BTECH11037-M.Esha

11.9.3.11- Evaluate

$$\sum_{k=1}^{11}(2+3^k)$$

The expression for $x(n)$ is given by:

$$x(n) = 2(n+1) + \frac{3^{n+1}-1}{2} \quad \text{where } n = 0, 1, 2, ...$$

The solution of the summation

$$\sum_{k=1}^{11}(2+3^k)$$

is

$$x(11) - x(0) = \left[2(12) + \frac{3^{12}-1}{2}\right] - \left[2(1) + \frac{3^1-1}{2}\right]$$

Simplifying further:

$$x(11) - x(0) = 24 + \frac{3^{12}-1}{2} - [2(1)+1]$$

$$= 24 + \frac{3^{12}-1}{2} - 3$$

$$= 21 + \frac{3^{12}-1}{2}$$