



Number System Ex 1.3 Q2

Answer :

(i) Let $x = 0.\overline{4}$

$$\Rightarrow x = 0.44444...$$

$$10x = 4.444...$$

$$\Rightarrow 10x = 4 + x$$

$$\Rightarrow 9x = 4$$

$$\Rightarrow x = \frac{4}{9}$$

Hence, $\boxed{0.\overline{4} = \frac{4}{9}}$

(ii) Let $x = 0.\overline{37}$

$$\Rightarrow x = 0.373737...$$

$$\Rightarrow 100x = 37.3737...$$

$$\Rightarrow 100x = 37 + 0.3737$$

$$\Rightarrow 100x = 37 + x$$

$$\Rightarrow 99x = 37$$

$$\Rightarrow x = \frac{37}{99}$$

$$\text{Hence, } \boxed{0.\overline{37} = \frac{37}{99}}$$

$$\text{(iii) Let } x = 0.\overline{54}$$

$$\Rightarrow x = 0.545454\dots$$

$$\Rightarrow 100x = 54.5454\dots$$

$$\Rightarrow 100x = 54 + 0.5454\dots$$

$$\Rightarrow 100x = 54 + x$$

$$\Rightarrow 99x = 54$$

$$\Rightarrow x = \frac{54}{99} = \frac{6}{11}$$

$$\text{Hence, } \boxed{0.\overline{54} = \frac{6}{11}}$$

$$(iv) \text{ Let } x = 0.\overline{621}$$

$$\Rightarrow x = 0.621621621\dots$$

$$\Rightarrow 1000x = 621.621621\dots$$

$$\Rightarrow 1000x = 621 + 0.621621\dots$$

$$\Rightarrow 1000x = 621 + x$$

$$\Rightarrow 999x = 621$$

$$\Rightarrow x = \frac{621}{999} = \frac{207}{333}$$

$$\Rightarrow x = \frac{23}{37}$$

$$\text{Hence, } \boxed{0.\overline{621} = \frac{23}{37}}$$

***** END *****