Exercise 10A

Question 4:

Since x=3/4 is a root of $ax^2+bx-6=0$, we have

$$a \times \left(\frac{3}{4}\right)^2 + b \times \left(\frac{3}{4}\right) - 6 = 0$$

$$\Rightarrow \frac{9a}{16} + \frac{3b}{4} - 6 = 0$$

$$9a + 12b = 96 \Rightarrow 3a + 4b = 32 \quad ---(1)$$

Again x = -2 being a root of $ax^2+bx-6=0$, we have

$$a \times (-2) + b(-2) - 6 = 0$$

$$4a - 2b = 6$$

$$2a - b = 3 \quad ---(2)$$

Multiplying (2) by 4 adding the result from (1), we get

11a = 44 ⇒ a = 4

Putting a = 4 in (1), we get

$$3 \times 4 + 4b = 32 \Rightarrow 4b = 32 - 12 = b = \frac{20}{4} = 5$$

$$\therefore a = 4 \text{ and } b = 5$$

Question 5:

$(3x-5)(2x+3) = 0, \Rightarrow 3x - 5 = 0$ or $2x + 3 = 0$

$$\Rightarrow x = \frac{5}{3} \text{ or } x = \frac{-3}{2}$$

Hence, $\frac{5}{3}, \frac{-3}{2}$ are the roots of the equation $(3x-5)(2x+3) = 0$

Question 6:

$5x^2 + 4x = 0 \Rightarrow x(5x+4) = 0$

$\Rightarrow x = 0$ or $(5x+4) = 0$

$\Rightarrow x = 0$ or $x = \frac{-4}{5}$

Hence, 0 and $\frac{-4}{5}$ are the roots of the equation $5x^2 + 4x = 0$

Question 7:

$$3x^2 - 243 \Rightarrow 0 \Rightarrow 3\left(x^2 - 81\right) = 0$$

$$\Rightarrow \quad x^2 = 81 \Rightarrow x = \pm\sqrt{81} = \pm 9$$

$$\Rightarrow \quad x = 9, -9$$

Hence, 9 and -9 are the roots of the equation $3x^2-243=0$.

Question 8:

$$x^2 + 12x + 35 = 0 \Rightarrow x^2 + 7x + 5x + 35 = 0$$

$$\Rightarrow x(x+7) + 5(x+7) = 0$$

$$\Rightarrow \quad (x+5)(x+7) = 0$$

$$\Rightarrow \quad x + 5 = 0 \quad \text{or} \quad x + 7 = 0$$

$$\Rightarrow x = -5, \; x = -7$$

Hence, -5 and -7 are the roots of $x^2+12x+35=0$.

********** END **********