1 (i) $x^2 - 3x - 10 = 0$

$\Rightarrow x^2 - 5x + 2x - 10 = 0$

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

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

$\therefore x - 5 = 0, \ x + 2 = 0$

$\Rightarrow x = 5, \quad x = -2$

$\therefore$ roots are $-2, 5$

1 (ii) $2x^2 + x - 6 = 0$

$\Rightarrow 2x^2 + 4x - 3x - 6 = 0$

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

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

$\Rightarrow x + 2 = 0, \ 2x - 3 = 0$

$\Rightarrow x = -2, \ x = \dfrac{3}{2}$

$\therefore$ roots are $-2, \dfrac{3}{2}$

1 (iii) $\sqrt{2}\, x^2 + 7x + 5\sqrt{2} = 0$

$\Rightarrow \sqrt{2}\, x^2 + 5x + 2x + 5\sqrt{2} = 0$

$\Rightarrow x(\sqrt{2}\, x + 5) + \sqrt{2}(\sqrt{2}\, x + 5) = 0$

$\Rightarrow (\sqrt{2}\, x + 5)(x + \sqrt{2}) = 0$

$\Rightarrow \sqrt{2}\, x + 5 = 0, \ x + \sqrt{2} = 0$

$\Rightarrow x = -\dfrac{5}{\sqrt{2}}, \ x = -\sqrt{2}$

$\therefore$ roots are $-\dfrac{5}{\sqrt{2}}, -\sqrt{2}$

1 (iv) $2x^2 - x + \dfrac{1}{8} = 0$

$(\times 8) \ \ 16x^2 - 8x + 1 = 0$

$\Rightarrow 16x^2 - 4x - 4x + 1 = 0$

$\Rightarrow 4x(4x-1) - 1(4x-1) = 0$

$\Rightarrow (4x-1)(4x-1) = 0$

$\Rightarrow 4x - 1 = 0, \ 4x - 1 = 0$

$\Rightarrow x = \dfrac{1}{4}, \quad x = \dfrac{1}{4}$

$\therefore$ roots are $\dfrac{1}{4}, \dfrac{1}{4}$

1 (v) $100x^2 - 20x + 1 = 0$

$\Rightarrow 100x^2 - 10x - 10x + 1 = 0$

$\Rightarrow 10x(10x-1) - 1(10x-1) = 0$

$\Rightarrow (10x-1)(10x-1) = 0$

$\Rightarrow 10x - 1 = 0, \ 10x - 1 = 0$

$\Rightarrow x = \dfrac{1}{10}, \quad x = \dfrac{1}{10}$

$\therefore$ roots are $\dfrac{1}{10}, \dfrac{1}{10}$

2 (i) $x^2 - 45x + 324 = 0$

$\Rightarrow x^2 - 36x - 9x + 324 = 0$

$\Rightarrow x(x-36) - 9(x-36) = 0$

$\Rightarrow (x-36)(x-9) = 0$

$\Rightarrow x = 36, \ x = 9$

if $x = 36$

no. Marbles John $= 36$

no. Marbles with Jwanti $= 9$

if $x = 9$

Marbles with John $= 9$

Marbles with Jwanti $= 36$