

Exercise 2A

Question 13:

Let  $\alpha$ ,  $\beta$  be the zeros of required quadratic polynomial f(x) We have,

$$\alpha + \beta = -5$$
 and  $\alpha\beta = 6$ 

$$f(x) = x^{2} - (\alpha + \beta)x + \alpha\beta$$
$$= x^{2} - (-5)x + 6 = x^{2} + 5x + 6$$

So, the required polynomial is  $x^2 + 5x + 6$ 

Now 
$$f(x) = x^2 + 5x + 6 = x^2 + 3x + 2x + 6$$
  
=  $x(x+3) + 2(x+3)$   
=  $(x+3)(x+2)$ 

$$f(x) = 0 \Rightarrow \text{either } x + 3 = 0 \text{ or } x + 2 = 0$$

$$\Rightarrow$$
 either  $x = -3$  or  $x = -2$ 

:. Zeros of the polynomials are -3 and -2

Question 14:

Let  $\alpha$ ,  $\beta$  be the zeros of required quadratic polynomial f(x) We have,

$$\alpha + \beta = \frac{5}{2}, \alpha\beta = 1$$

Now, 
$$f(x) = x^2 - (\alpha + \beta)x + \alpha\beta$$

$$=x^2-\frac{5}{2}x+1=\frac{1}{2}\big(2x^2-5+2\big)$$

The polynomial whose zeros are  $\alpha$ ,  $\beta$  is  $2x^2 - 5x + 2$ 

Further, 
$$f(x) = \frac{1}{2}(2x^2 - 5x + 2) = \frac{1}{2}(2x^2 - 4x - x + 2)$$
  

$$= \frac{1}{2}[2x(x - 2) - (x - 2)]$$

$$= \frac{1}{2}(x - 2)(2x - 1)$$

$$f(x) = 0 \implies \frac{1}{2}(x - 2)(2x - 1) = 0$$

$$\therefore \text{ for that } x-2=0 \quad \text{ or } 2x-1=0$$

i.e., Either 
$$x = 2$$
 or  $x = \frac{1}{2}$ 

 $\therefore$  Zeros of polynomial are 2 and  $\frac{1}{2}$ 

\*\*\*\*\*\*\*\*\* END \*\*\*\*\*\*\*