

5

$$\begin{array}{r}
 x^2 - 4x + 8 - k \\
 \hline
 x^2 - 2x + k \left) \begin{array}{l} x^4 - 6x^3 + 16x^2 - 25x + 10 \\ \underline{- (x^4 - 2x^3 + kx^2)} \\ -4x^3 + x^2(16-k) - 25x + 10 \\ \underline{- (-4x^3 + 8x^2 - 4kx)} \\ x^2(8-k) + x(4k-25) + 10 \\ \underline{- (x^2(8-k) - 2x(8-k) - k^2 + 8k)} \\ x(4k-25+16-2k) + k^2 + 10 - 8k \\ = x(2k-9) + k^2 + 10 + 8k \end{array}
 \end{array}$$

given remainder = $x + a$

$$\therefore x + a = x(2k-9) + k^2 + 10 - 8k$$

comp. coeff. of x on both sides

$$1 = 2k - 9$$

$$\Rightarrow 2k = 10$$

$$\Rightarrow k = 5$$

comp. constants on both sides

$$a = k^2 + 10 - 8k$$

$$a = 5^2 + 10 - 8 \times 5$$

$$\Rightarrow a = 35 - 40$$

$$\Rightarrow a = -5$$

$$\therefore a = -5, k = 5$$