(c) : Let the A.P. be $a_1, a_2, a_3 \ldots a_{2k}$

Given, $\sum_{r=1}^{k} a_{2r-1} = 40$, $\sum_{r=1}^{k} a_{2r} = 55$ and $a_{2k} - a_1 = 27$

$$\Rightarrow \frac{k}{2}[2a_1 + (k-1)2d] = 40 \quad \ldots(i)$$

$$\text{and } \frac{k}{2}[2a_2 + (k-1)2d] = 55 \quad \ldots(ii)$$

$$\text{and } a_1 + (2k-1)d - a_1 = 27 \quad \ldots(iii)$$

After solving, we get

$$\text{From (i), } a_1 = \frac{40}{k} - (k-1)d,$$

$$\text{From (ii), } a_2 = \frac{55}{k} - (k-1)d$$

$$\text{and from (iii), } d = \frac{27}{2k-1}$$

(ii) – (i),

$$\Rightarrow d = \frac{15}{k} \Rightarrow \frac{27}{2k-1} = \frac{15}{k} \Rightarrow 9k = 10k - 5 \quad \therefore \ k = 5$$