

$$5① \quad 7, 13, 19, \dots, 205$$

$$a = 7, d = 13 - 7 \\ = 6$$

$$l = a_n = 205$$

$$a + (n-1)d = 205$$

$$7 + (n-1)6 = 205$$

$$\Rightarrow (n-1)6 = 198^{33}$$

$$\Rightarrow n = 34$$

$\therefore$  no. of terms in given A.P. = 34

$$5② \quad 18, 15\frac{1}{2}, 13, \dots, -47$$

$$a = 18, d = \frac{31}{2} - 18 \\ = \frac{31 - 36}{2} \\ = -\frac{5}{2}$$

$$l = a_n = -47$$

$$a + (n-1)d = -47$$

$$18 + (n-1)\left(-\frac{5}{2}\right) = -47$$

$$\Rightarrow (n-1)\left(-\frac{5}{2}\right) = -47 - 18$$

$$\Rightarrow (n-1)\left(-\frac{5}{2}\right) = -65$$

$$\Rightarrow n-1 = -65 \times \frac{2}{-5}$$

$$\Rightarrow n-1 = 26$$

$$\Rightarrow n = 27$$

$\therefore$  no of terms = 27

$$⑥ \quad 11, 8, 5, 2, \dots$$

$$a = 11, d = 8 - 11 \\ = -3$$

$$\text{let } a_n = -150$$

$$a + (n-1)d = -150$$

$$11 + (n-1)(-3) = -150$$

$$\Rightarrow -3(n-1) = -161$$

$$\Rightarrow n-1 = \frac{-161}{-3}$$

$$\Rightarrow n = 1 + \frac{161}{3} \\ = \frac{3+161}{3}$$

$$n = \frac{164}{3}$$

$\therefore n$  is not an integral value  
 $\therefore -150$  is not a term of given A.P.

$$⑦ \quad a_{11} = 38$$

$$a + 10d = 38 \dots \textcircled{I}$$

$$a_{16} = 73$$

$$a + 15d = 73 \dots \textcircled{II}$$

$$\textcircled{I} - \textcircled{II}$$

$$a + 10d = 38$$

$$a + 15d = 73$$

$$\hline -5d = 35 \quad \textcircled{7}$$

$$\Rightarrow d = +7$$

Sub  $\textcircled{I}$

$$a + 70 = 38$$

$$\Rightarrow a = -32$$

$$a_{31} = a + 30d$$

$$= -32 + 30 \times 7$$

$$= -32 + 210$$

$$= 178$$