

$$2 \text{ (iii)} \quad 5, \overset{6\frac{1}{2}}{\boxed{13\frac{1}{2}}}, \boxed{8}, 9\frac{1}{2}$$

$$3d = \frac{19}{2} - 5$$

$$= \frac{19-10}{2}$$

$$\Rightarrow d = \frac{9}{2}$$

$$\Rightarrow d = \frac{3}{2}$$

$$a_2 = a + d$$

$$= 5 + \frac{3}{2}$$

$$= \frac{13}{2}$$

$$= 6\frac{1}{2}$$

$$a_3 = a + 2d$$

$$= 5 + 2 \times \frac{3}{2}$$

$$= 8$$

$$3 \text{ (iv)} \quad -4, \boxed{-2}, \boxed{0}, \boxed{2}, \boxed{4}, 6$$

$$5d = 6 - (-4)$$

$$\Rightarrow d = \frac{6+4}{5}$$

$$= \frac{10}{5}$$

$$= 2$$

$$a_2 = a + d$$

$$= -4 + 2$$

$$= -2$$

$$a_3 = a + 2d$$

$$= -4 + 2 \times 2$$

$$= 0$$

$$a_4 = a + 3d$$

$$= -4 + 2 \times 3$$

$$= 2$$

$$a_5 = a + 4d$$

$$= -4 + 4 \times 2$$

$$= 4$$

$$2 \text{ (v)} \quad \boxed{53}, 38, \boxed{23}, \boxed{8}, \boxed{-7}, -22$$

$$4d = -22 - 38$$

$$d = \frac{-60}{4}$$

$$= -15$$

$$a = a_2 - d$$

$$= 38 - (-15)$$

$$= 38 + 15$$

$$= 53$$

$$a_3 = a + 2d$$

$$= 53 + 2(-15)$$

$$= 53 - 30$$

$$= 23$$

$$a_4 = a + 3d$$

$$= 53 + 3(-15)$$

$$= 53 - 45$$

$$= 8$$

$$a_5 = a + 4d$$

$$= 53 + 4(-15)$$

$$= 53 - 60$$

$$= -7$$

$$4 \quad 3, 8, 13, 18, \dots$$

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

$$= 5$$

$$a_n = 78$$

$$a + (n-1)d = 78$$

$$3 + (n-1)5 = 78$$

$$\Rightarrow (n-1)5 = 75$$

$$\Rightarrow n = 15 + 1$$

$$= 16$$

\therefore 78 is 16th term of given A.P.