

۱- الف

$$t_n = \overset{+4}{\omega}, \overset{+4}{\omega}, \overset{+4}{\omega}, \overset{+4}{\omega}, \dots \rightarrow d, 4$$

$$t_n = t_1 + (n-1)d = \omega + (n-1)4, \quad (4n+1)$$

$$t_{10} = 4(10) + 1 = 41$$

(ب)

$$t_n = \overset{+4}{\omega}, \overset{+4}{\omega}, \overset{+4}{\omega}, \overset{+4}{\omega}, \dots \rightarrow d, 4$$

۲- الف

$$S_n = \frac{n}{2} (t_1 + t_n) = \frac{10}{2} (4 + 41) = 5 \times 45 = 225$$

$$\overset{+4}{\omega}, \overset{+4}{\omega}, \overset{+4}{\omega}, \overset{+4}{\omega} \rightarrow a_{10} + a_{11} + a_{12} + a_{13} \Rightarrow 4\omega + (10+11+12+13)d = 4\omega + 46d = 24 + (46 \times 4) = 24 + 184 = 208$$

۳-

$$d = \frac{2-1-\sqrt{3}}{1} = 1-\sqrt{3} \rightarrow t_{10} - t_{100} = 90d = 90(1-\sqrt{3})$$

۴-

$$2 \times 3 \times 4 \times \omega^2 = \omega^3 + \omega^2 \rightarrow 4 \times \omega^2 = \omega^3 + \omega^2 \rightarrow \omega^3 = 4\omega^2 \rightarrow y = 4x+1$$

$$\rightarrow x+y=4 \xrightarrow{y=4x+1} x+4x+1=4 \rightarrow x=1, y=4(1)+1=5 \Rightarrow xy=1 \times 5 = 5$$

۵-

$$t_x = 2, 4x+2x-4, 11x-4 \rightarrow 4x = -2 \rightarrow x = -\frac{1}{2} \Rightarrow a_n = -3, -2, -1, 0, 1, 2, \dots \rightarrow a_{10} = 9$$

۶-

$$\left. \begin{array}{l} a_n = 3, 5, 7, \dots \rightarrow d, 2 \\ b_n = 2, 5, 8, \dots \rightarrow d', 3 \end{array} \right\} \begin{array}{l} d_{\text{مجموع}} = 5 \\ d', d \end{array} \rightarrow \omega, 11, 17, \dots \rightarrow t_n, 4n-1$$

$$\text{اولین جمله مشترک در دنباله} = \omega = t_1$$

$$a_r = 41 \Rightarrow 4n-1 \leq 41 \rightarrow n \leq 10 \rightarrow n = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 \rightarrow (10)$$

۷-

$$a_1 + a_r + a_{11} = 3a_r \rightarrow a_r = V \rightarrow d = \frac{3\omega - V}{1}, 21 \Rightarrow a_1 = V-21 = -21$$

$$\frac{a_r - a_1 + a_1}{a_1} = \frac{a+2d - a - d + a}{a} = \frac{a+d}{a} = \frac{a_r}{a} = \frac{V}{-21} = \left(\frac{-1}{3} \right)$$

$$a_1 + a_r + a_w = 1\Delta \rightarrow \varphi_{ar} = 1\Delta \rightarrow a_r = \Delta$$

$$a_\varepsilon + a_\omega = \varphi_\Delta = a_r + a_v = \Delta + a_v \rightarrow a_v = \varphi_\Delta$$

$$\rightarrow d, \frac{a_v - a_r}{v - r}, \frac{\varphi_\Delta - \Delta}{\Delta}, \varphi$$

$$a_1, a_v + \varphi_d, \varphi_\Delta + \varphi, (\varphi_\Delta)$$

$$S_q, 4S_r \rightarrow a_1 + a_r + a_r + a_\varepsilon + a_\omega + a_r + a_v + a_r + a_q = 4a_\Delta = 4(\varphi_{ar}), \varphi_{var} \Rightarrow 4a_\Delta = \varphi_{var}$$

$$a_\Delta = \varphi_{ar}$$

$$\Rightarrow a + \varphi_d, \varphi_{ar} + \varphi_d \rightarrow a, \frac{d}{r} \rightarrow \frac{a_{re}}{a_v}, \frac{a + 19d}{a + 4d}, \frac{\frac{d + 19d}{r}}{\frac{d + 19d}{r}}, \frac{\varphi_{qd}}{\varphi_d}, (\varphi)$$

$$a_1 = 11, a_v = \varphi_\Delta \rightarrow d, \frac{\varphi_\Delta - 11}{9}, \varphi$$

$$a_\varepsilon = a + \varphi_d, 11 + 12, \varphi_\Delta, b_\varepsilon \rightarrow b_\varepsilon, \varphi_r, b, \varphi_\Delta \rightarrow d', \frac{\varphi_\Delta - \varphi_\Delta}{r}, -\Delta$$

$$\Rightarrow b_n = \varphi_\Delta, \varphi_\Delta, \varphi_\Delta, \varphi_\Delta, 11, 12$$

(أسفل صواب)