



UNIT 5 Z - Transforms and Difference equations  
Formation of Difference Equations

ii)  $y_n = A2^n + Bn \rightarrow \textcircled{1}$

$$y_{n+1} = A2^{n+1} + B(n+1)$$

$$= A2^n \cdot 2 + B(n+1) \rightarrow \textcircled{2}$$

$$y_{n+2} = A2^{n+2} + B(n+2)$$

$$= 4A2^n + B(n+2) \rightarrow \textcircled{3}$$

Eliminating A & B from  $\textcircled{1}$ ,  $\textcircled{2}$  &  $\textcircled{3}$

$$\begin{vmatrix} y_n & 1 & n \\ y_{n+1} & 2 & n+1 \\ y_{n+2} & 4 & n+2 \end{vmatrix} = 0$$

$$y_n [(2n+4 - 4n - 4)] - 1 [(n+2)y_{n+1} - (n+1)y_{n+2}] + n(4y_{n+1} - 2y_{n+2}) = 0$$

$$-2ny_n - ny_{n+1} - 2y_{n+1} + ny_{n+2} + y_{n+2} + 4ny_{n+1} - 2ny_{n+2} = 0$$

$$-2ny_n + (3n-2)y_{n+1} + (1-n)y_{n+2} = 0.$$

H.W 1. Form the difference eqns from

i)  $y_n = (A+Bn)2^n$

ii)  $y_n = A + B2^n$