Q1)

$$h[n] = 2\delta[n] + 3\delta[n-1] - h[n-2]$$

$x[n] \rightarrow \delta[n]$

$y[n] \rightarrow h[n]$

$$h[n] = (A j^n + B(-j)^n)\, u[n]$$

at $n = 0$

$$A + B = 2 \quad \text{---} (1)$$

at $n = 1$

$$A - jB = 3 \quad \text{---} (2)$$

at $n = 2$

$$-A - B = -h[0]$$

$$= -(A + B)$$

$$jA + jB = j2 \quad \text{---} (3) \quad (j \times (1))$$

$$A - jB = 3 \quad \text{---} (4)$$

$$(j+1)A = 2 + 2j \qquad (\text{adding } 3 \& 4)$$

$$A = \frac{3+2j}{1+j}$$

$$B = 2 - \left(\frac{3+2j}{1+j}\right)$$

$$B = \frac{2+2j - 3 - 2j}{1+j} = -\frac{1}{1+j}$$

$$A = \frac{3+2j}{1+j} \qquad B = -\frac{1}{1+j}$$