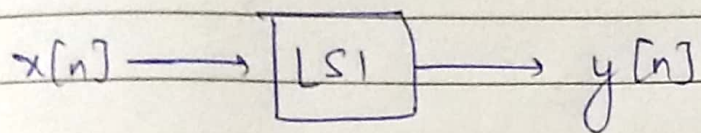
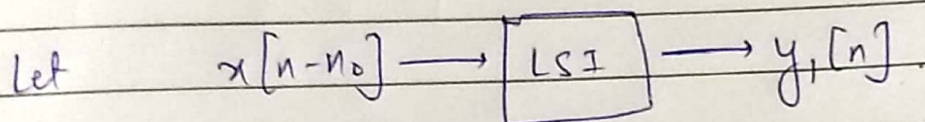


Q.4)



$x[n]$  — given to be periodic with period  ~~$n_0$~~   $n_0$ .

$$\Rightarrow x[n - N_0] = x[n] \quad \forall n.$$



But we know  $x[n] = x[n - n_0]$   
 $\Rightarrow y[n] = y_1[n]$ .

By shift-invariance property,  $y_1[n] = y[n - n_0]$   
 $\Rightarrow y[n] = y[n - n_0] \quad \forall n.$

Hence, when an LSI system is given an input with period  $n_0$ , the output is also periodic with period  ~~$n_0$~~   $n_0$ .