$$x[n] = \alpha^n \{u[n] - u[n-10]\}$$

$$h[n] = \beta^n u[n]$$

$$y[n] = x[n] * h[n]$$

$$y[n] = \sum_{k=-\infty}^{\infty} x[k]\, h[n-k] = \sum_{k=-\infty}^{\infty} \alpha^k [u[k] - u[k-10]]\, \beta^{n-k} u[n-k]$$

$$0 \le k \le 9$$

$$k \le n$$

$$0 \le n \le 9$$

$$\sum_{k=0}^{n} \alpha^k \beta^{n-k}$$

② $n > 9$

$$\sum_{k=0}^{9} \alpha^k \beta^{n-k}$$