a)

$$x(n) \rightarrow \boxed{h_k(n)} \rightarrow \boxed{\downarrow M} \rightarrow \otimes \rightarrow X_k^{DFTG}(m)$$

$$W_K^{(k-k_0)(mM+n_0)}$$

b)

$$\hat{X}_k^{DFTG}(m) \rightarrow \otimes \rightarrow \boxed{\uparrow M} \rightarrow \boxed{f_k(n)} \rightarrow \hat{x}_k(n)$$

$$W_K^{-(k+k_0)(mM+n_0)}$$