$$G_f = k_f \frac{\tau_1 s + 1}{T_2 s + 1}$$

2- Tustins metode) $s = \frac{2}{T}\frac{(z-1)}{(z+1)}$

$$\to G_f = k_f \frac{2\tau_1(z-1) + T(z+1)}{2\tau_2(z-1) + T(z+1)}, \quad G_f = \frac{Y}{X}$$

$$Y(z)\left[2\tau_2 z - 2\tau_2 + Tz + T\right] = k_f\left[2\tau_1 z - 2\tau_1 + Tz + T\right]X(z)$$

$$Y(z)\left[(2\tau_2 + T)z + T - 2\tau_2\right] = k_f\left[(2\tau_1 + T)z + T - 2\tau_1\right]X(z)$$

$$Y(z)\left[(2\tau_2 + T) + z^{-1}(T - 2\tau_2)\right] = k_f\left[(2\tau_1 + T) + z^{-1}(T - 2\tau_1)\right]X(z)$$

$$\Rightarrow (2\tau_2 + T)y[n] + (T - 2\tau_2)y[n-1] = k_f(2\tau_1 + T)x[n] + k_f(T - 2\tau_1)x[n-1]$$

$$\to y[n] = \frac{1}{2\tau_2 + T}\left[(2\tau_2 - T)y[n-1] + k_f(2\tau_1 + T)x[n] + k_f(T - 2\tau_1)x[n-1]\right]$$