$z_n = \begin{pmatrix} 1 \\ 0 \\ 0 \\ \vdots \\ 0 \end{pmatrix}$ k.

n $\boxed{k=1}$ $\boxed{k=3}$

$z_n = \begin{pmatrix} 0.7 \\ 0.1 \\ 0.2 \end{pmatrix}$

$z_n = \begin{pmatrix} 0 \\ 1 \\ 0 \\ \vdots \\ 0 \end{pmatrix}$ $k=2$

$$Z = \begin{pmatrix} 0.7 & 0.5 & 0.6 & 0.1 & 0.1 \\ 0.2 & 0.4 & 0.1 & 0.7 & 0.1 \\ 0.1 & 0.1 & 0.3 & 0.2 & 0.8 \end{pmatrix} \begin{matrix} \leftarrow k=1 \\ \leftarrow k=2 \\ \leftarrow k=3 \end{matrix}$$

$k=3$

$n=1 \quad \ldots\ldots \quad n=5$

$$P_1 = \frac{N_c}{N} \simeq \frac{N_k}{N_c}$$

$$P_1 = \frac{0.7 + 0.5 + 0.6 + 0.1 + 0.1}{5}$$

$$P_2 =$$

$$\mu_{(1)} = \frac{0.7X_1 + 0.5X_2 + 0.6X_3 + 0.1X_4 + 0.1 \cdot X_5}{0.7 + 0.5 + 0.6 + 0.1 + 0.1}$$

$$X = \{ \underset{c_1}{x_1}, \underset{c_2}{x_2}, \underset{c_3}{x_3}, \underset{c_4}{x_4}, \underset{c_5}{x_5} \}$$

$$P(X) = \prod_{i=1}^{5} p(x_i, c_i) = p(x_1, c_1) \cdot p(x_2 | c_2) \cdots p(x_5 | c_5)$$

$$L(X, \theta) = \log \prod_{i=1}^{5} p(x_i, c_i) \Rightarrow L(x, \theta) = \log \prod_{n} p(x_n, c_n)$$