$$
\begin{aligned}
H(X) &= \sum_{X_t \in X} p(X_t) H(X_t) = -\sum_{i=0}^{m} \sum_{j=0}^{m} p(c_i) p(c_j|c_i) \log p(c_j|c_i) \\
&= -\sum_{i=0}^{m} p(c_i) \sum_{j=0}^{m} p(c_j|c_i) \log p(c_j|c_i),
\end{aligned}
$$