$$-L(\beta) = \prod_{i=1}^{N}\prod_{c=1}^{C} {\mu_{ic}}^{y_{ic}} = \sum_{i=1}^{N}\sum_{c=1}^{C} y_{ic} \log \mu_{ic}$$

$$= \sum_{i=1}^{N}[(\sum_{c=1}^{C} y_{ic}\beta_c^T x_i) - (\sum_{c'=1}^{C} \exp(\beta_{c'}^T x_i))]$$