$$J_{(\theta)} = -\frac{1}{m}\left[\sum_{i=1}^{m}\sum_{j=1}^{k}\omega_j \log\frac{\exp(\theta_j^T x^{(i)})}{\sum_{l=1}^{k}\exp(\theta_l^T x^{(i)})}\right] \tag{1}$$

$$J(\theta) = -\frac{1}{m}\sum_{i=1}^{m}\omega\left[y^{(i)}\log\left(h_\theta(x^{(i)})\right) + (1-y^{(i)})\log\left(1-h_\theta(x^{(i)})\right)\right] \tag{2}$$

$$\omega = \begin{cases} 10 & \forall p(i,j) \in \mathbf{E} \\ 1 & otherwise \end{cases} \tag{3}$$