The Q-function is then

$$Q(\theta|\theta') = \mathbb{E}[\log \mathbb{P}(\mathbf{O}, \mathbf{X}, \mathbf{C}, \mathbf{G}|\theta, \psi, \mathbf{Z}|\theta']$$
(1)

$$Q(\theta|\theta') = \mathbb{E}[\log \mathbb{P}(\mathbf{O}, \mathbf{X}, \mathbf{C}, \mathbf{G}|\theta, \psi, \mathbf{Z}|\theta']$$

$$= \sum_{\mathbf{Z}, \mathbf{X}, \mathbf{C}, \mathbf{G}} [\log \mathbb{P}(\mathbf{O}, \mathbf{X}, \mathbf{C}, \mathbf{G}|\theta) \mathbb{P}(\mathbf{G}, \mathbf{C}, \mathbf{X}|\theta')$$
(2)