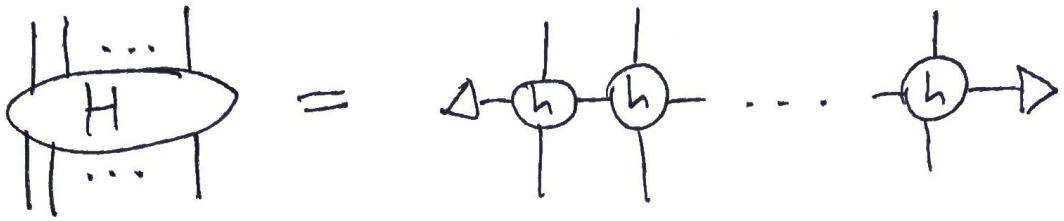
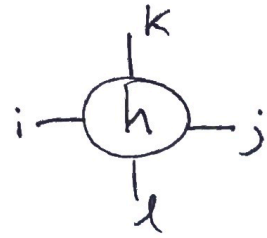
$$H = \sum_n \left(-J \sigma_n^z \sigma_{n+1}^z - g \sigma_n^x \right)$$



where 

$= \begin{pmatrix} (\mathbb{1})_{kl} & 0 & 0 \\ \sigma^z & 0 & 0 \\ -g\sigma^x & -J\sigma^z & \mathbb{1} \end{pmatrix}_{ij}$,

$\triangleleft = (0,0,1)$, $\triangleright = (1,0,0)$

The cost function (energy) is

$$\frac{\langle \psi | H | \psi \rangle}{\langle \psi | \psi \rangle} =$$