

$$|q_1\rangle = |\psi\rangle - -$$

$$|q_{0}\rangle = |\psi\rangle - - /$$

$$|q_{1}\rangle = |\psi\rangle - - /$$

$$|q_{2}\rangle = |\phi\rangle - - - |$$

$$|q_{3}\rangle = |0\rangle - - - - |$$

$$|q_3\rangle = |0\rangle$$