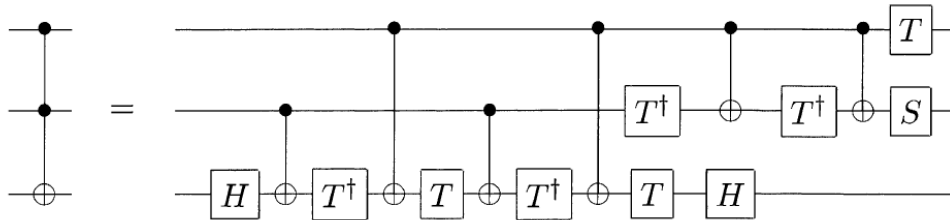


Question 1: How to unambiguously distinguish $\{|\psi_1\rangle = |0\rangle, |\psi_2\rangle = |+\rangle\}$ using **POVM** measurements?

Question 2: Verify the following circuit implements the **Toffoli** gate.



Question 3: If the state of the second register is $|\psi\rangle = \sum_u c_u |u\rangle$ not just $|u\rangle$ in the phase estimation, how to implement the three stages?