* SUMMARY : IMPLEMENTATION OF QUANTUM CIRCUITS

- Any measurement at an intermediate stage, producing classical bits, can be shifted to the end and make use of quantum conditionals i.e. controlled gates.
- Measurement in a basis other than computational basis can be carried out by mapping the basis to computational basis using a unitary transformation.
- Measurement of multiple qubits is same as measurement being carried out on each qubit.
- A quantum circuit can always mimick a classical one by implementing NOT, qubit exchange, AND (for $|0\rangle, |1\rangle$) and FANOUT (for $|0\rangle, |1\rangle$).
- A k-control n-target controlled gate can be converted to a 1-control n-target controlled gate using (k-1) work qubits for classical AND.
- A 1-control 1-target gate can be implemented using decomposition of U as $e^{i\alpha}AXBXC$.
- A 1-control n-target gate can be implemented by splitting it into multiple 1-control 1-target gates.
- A multiple qubit gate can always be decomposed into a product of two level gates.
- A two level gate can always be implemented using CNOT and one qubit gates.
- Any one qubit gate can be approximated to arbitary accuracy using Hadamard, phase and $\pi/8$ gates.