Topics to Chapter 3 – Computer Science from the point of view of Quantum Computing

1. Turing Machines and Universal Turing Machines.
2. Reductions between Circuits and Turing Machines.
3. Church-Turing Thesis
4. Hilbert's Entscheidungsproblem
5. Halting Problem, Probabilistic Halting Problem, Halting Oracle.
6. Big O Notation, examples
7. Computational Complexity
8. Strong Church-Turing Thesis
9. Decision Problems and the Complexity Classes P and NP
10. NP versus NP-complete
11. Give several examples of NP-complete problems
12. NPI, PSPACE and EXP classes of complexity
13. BPP
14. Landauer's principles
15. BPP and Chernoff Bound
16. Maxwell's Demon
17. Minsky Machines