

Duration: 3hrs

[Max Marks:80]

- N.B. :** (1) Question No 1 is Compulsory.
 (2) Attempt any three questions out of the remaining five.
 (3) All questions carry equal marks.
 (4) Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR [20]
 - a Write short note Quantum Cryptography.
 - b Explain different Quantum Applications.
 - c Explain ION Traps.
 - d Explain Quantum circuits with example.
 - e Explain Simon's algorithm.
- 2 a Differentiate between Classical and Quantum Computing. [10]
 - b Explain Quantum Noise and Quantum Operations with suitable examples. [10]
- 3 a How Qbits is different from bits. Explain with example. [10]
 - b Explain Shor Code Algorithm and explain the methods of quantum error correction [10]
- 4 a Explain how quantum counting is used for speeding up the solution of NP complete problems. [10]
 - b Explain in brief the limitations of quantum operations formalizations. [10]
- 5 a Explain Grover's algorithm with example. [10]
 - b Explain Privacy amplification and information Reconciliation. [10]
- 6 a Explain fault tolerant quantum computations. [10]
 - b What is Quantum Error Correction? Explain with example. [10]
