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Title **Studies in Quantum Computing**

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Division **ALD**

NAL Project No: A-8-602

Document No. **PD AL 0506**

Date of issue **June 2005**

Contents **Pages** **Figures** **Tables** **References**

External Participation *Nil*

Sponsor **x**

Approval **Head, ALD**

Remarks **x**

Keywords Single quantum-bit, Quantum-register, Quantum-gates, Quantum Entanglement, Quantum dense coding, Quantum Teleportation, Shor's Quantum Factorization Algorithm.

Abstract

Quantum computing is a fast emerging field with diversified potential applications including those in aerospace and defense. Besides high speed computing that would put the fastest of contemporary supercomputers in shade, other applications pertain to virtually foolproof quantum encryption for security, and even teleportation. The phenomenon of teleportation has been recently demonstrated in a primitive form.

In this report, a literature survey is carried out from a theoretical perspective. Study includes the fundamentals of quantum computation and information. Quantum entanglement, which is at the heart of many interesting applications like teleportation and quantum dense coding, is also explained. Finally, Shor's quantum prime factorization algorithm is discussed.