

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

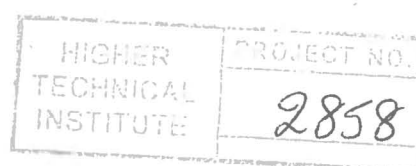
DIPLOMA PROJECT

**DEVELOPMENT OF A FIBER OPTIC
COMMUNICATION SYSTEM**

E1123

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COMMUNICATION SYSTEM**

This project is submitted in partial fulfillment
requirements for award of
the

DIPLOMA IN ELECTRICAL ENGINEERING

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Introduction

Sound (and Data) can be transmitted into digital signal that is encoded into light. On the communication superhighway, pulsing light generated by lasers carries messages on strands of glass, called optical fiber. In the following project it would be stated why optical fiber is superior for transmission, how it works and where it is used.

Light carries information in much the same way the electronics systems carry information. First the sound of your voice is translated into a digital signal by the use of an analog to digital converter. Then this signal is coded into light. The smallest bit of information in a digital system is a bit or a binary digit. In light systems, the presence or absence of a pulse of light communicates a bit of information.

Fiber Optic cables transects over the land while undersea fiber optic cables cross the oceans. The capacity of fiber optic systems continually increases. In 1980, the first systems could transmit 45Mbps. Today highest capacity systems transmit 5Gbps. The different types of Fiber optic communication systems are described in **part A**.

Fiber optics Cables can transmit more telephone calls than coaxial cables microwave radio or satellite. Electrical signals travel faster at higher frequencies in optical cables and they can carry more than one set of these signals. Fiber optic networks have replaced transcontinental copper cable networks and entirely new networks are continually being created. The copper cables role in today's life is only for electrical installations because they need more protection and they are being replaced by the fiber optic cables (which their need of protection is either minimal or not necessary at all).

Fiber optic cables themselves must be connected to some kind of network in order to be capable to transfer any kind of information in this astonishing ways. That kinds of networks that are analyzed in **Part B** and some methods in order to protected them.

To test an existing fiber optic communication system using the fiber optic educator is analysis in **Part C**