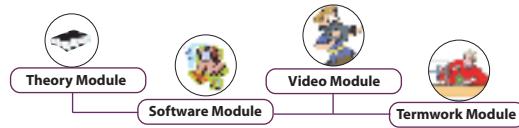


Optical Fibre Communication



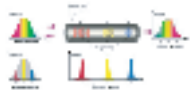
System Requirement:- IBM-PC Compatible with Window-OS, 128 MB RAM/Multimedia Kit

Theory module

Features : Theory, Figures, Photographs, Animations with controller, Highlighter tool, Note creation facility, Systematic page navigation, Printing facility, Access to Videos at appropriate locations.

List of Topics

Optical fibre waveguides



Advantages of optical fibre communications, Ray theory transmission, Electromagnetic mode theory for optical propagation, Modes, mode coupling, Step index fibre, graded index fibre, single mode fibres.

Transmission characteristics

Attenuation, Linear and nonlinear scattering losses, Bend loss, Intramodal and intermodal dispersion, overall fibre dispersion



Optical fibre and cables



Introduction, Preparations of optical fibre, Optical fibre- multimode step index fibres multimode graded index fibre, Single-mode fibre, Plastic-clad fibres, All plastic fibres, Stability of the fibre transmission characteristics.

Optical fibre connection

Fibre alignment and join loss- Multimode and single mode fibre joints, fibre splices- fusion mechanical and multiple splices, Cylindrical and biconical ferrule, Double eccentric, Duplex and multiple connectors, couplers - three and four ports, star, wavelength division multiplexing couplers.



Optical Sources



Laser-basic Concepts, Optical emission from semiconductors, The semiconductor injection, Single frequency injection, Nonsemiconductors, Mid infrared and characteristics.

Light emitting diode- structures, Characteristics-output power, spectrum, modulation bandwidth and reliability.

Optical detectors



Optical detection principle, Absorption, Quantum efficiency, responsivity, semiconductors photodiodes with and without internal gain, mid infrared photodiodes

Direct detection receiver performance considerations

Noise- thermal, dark current, quantum, digital signalling quantum and analog transmission quantum noise, Receiver noise- p-n, p-i-n and avalanche photodiode receiver, receiver capacitance and bandwidth



Optical amplification and integrated optics



Optical amplifiers, semiconductors laser and fibre amplifiers, integrated optics- planer waveguide, optical devices- beam splitters, directional couplers, switches and modulators.

Optical fibre systems

Intensity modulation/direct detection- Optical transmitter and receiver circuits, digital analog and distribution systems. Coherent- basic systems, detection principles, practical constraints, modulation formats, demodulation schemes, receiver sensitivities.

