

Optical Fibre Communication

B.E. Sem. VIII [EXTC]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical & Oral	–	–
Oral Exam	–	25
Term Work	–	25

SYLLABUS

Objective: To understand the concept of transmission through Optical Fibre.

1. Overview of Optical Fiber Communications

Communication system applications in the electromagnetic spectrum, elements of or fiber transmission link, advantages of optical fiber communication.

Light Propagation in Optical Fiber

Filter types, rays and modes, ray theory transmission, electromagnetic mode theory propagation, single mode and multimode fibers, linearly polarized models.

2. Fiber Optics Technology

Fiber materials, fiber fabrication, fiber optic cables, couplers, splices, connectors.

3. Signal Degradation in Optical Fibers

Attenuation, dispersion, bit rate and bandwidths, mode coupling.

4. Optical Sources and Detectors

Related semiconductor physics, light emitting diodes, laser diodes, their characteristics modulation circuits, optical detection principles, quantum efficiency, responsivity, n time photo detector noise, PIN and Avalanche photodiodes.

5. Optical Receiver Operation

Noise, Receiver capacitance, receiver structures, pre-amplifiers.

6. Optical Fiber Systems

Link power budget, rise time budget, analog systems, digital systems, coherent systems- homodyne and heterodyne detection, multiplexing.

7. Optical Fiber Measurements

Measurement of attenuation, dispersion, refractive index profile, numerical aperture diameter, OTDR.

Reference Books :

1. Optical Fiber Communication (*John Senior*) Prentice Hall of India Publication.
2. Optical Fiber Communication (*Gred Keiser*) Mc- Graw Hill Publication
3. Fiber Optic Communication (*Djafar K. Mynbarv, Lowell L. Scheiner*)
4. Optical Fiber Communication (*Selvarajan, Subartkar, T. Srinivas*) Tata Mc-Graw Hill Publication
5. Fundamentals of Fibre Optics in Telecommunication and sensor System (*Pal B.P.*) New Age International
6. Fiber Optic Communication (*Agrawal*) 3rd edi, Wiley
7. Fibre optics and Optoelectronics (*Khare*) Oxford University Press
8. Lightwave Communication Systems: A Practical Perspective (*Rajappa Papannareddy*) Penram International Publishing

