Written by Administrator Saturday, 07 November 2009 05:53 -

Subject Code		:
IA Marks	: 25	
		1
No. of Lecture Hrs/Week		: 04
Exam Hours	: 03	
Total no. of Lecture Hrs.		: 52
Exam Marks	. 100	
	: 100	

PART - A

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Unit - 1

Overview of Optical Fiber Communication: Introduction, Historical development, general system, advantages, disadvantages, and applications of optical fiber communication, optical fiber waveguides, Ray theory, cylindrical fiber (no derivations in article 2.4.4), single mode fiber, cutoff wave length, mode filed diameter. Optical Fibers: fiber materials, photonic crystal, fiber optic cables specialty fibers.

8 Hours

Unit - 2

Transmission characteristics of optical fibers: Introduction, **A**ttenuation, absorption, scattering losses, bending loss, dispersion, Intra model dispersion, Inter model dispersion.

5 Hours

Unit - 3

Optical Sources and Detectors: Introduction, LED's, LASER diodes, Photo detectors, Photo detector noise, Response time, double hetero junction structure, Photo diodes, comparison of

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photo detectors.

7 Hours

Unit - 4

Fiber Couplers and Connectors: Introduction, fiber alignment and joint loss, single mode fiber joints, fiber splices, fiber connectors and fiber couplers.

6 Hours

PART - B

Unit - 5

Optical Receiver: Introduction, Optical Receiver Operation, receiver sensitivity, quantum limit, eye diagrams, coherent detection, burst mode receiver, operation, Analog receivers

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6 Hours

Unit - 6

Analog and Digital Links: Analog links – Introduction, overview of analog links, CNR, multichannel transmission techniques, RF over fiber, key link parameters, Radio over fiber links,

microwave photonics.

Digital links – Introduction, point–to–point links, System considerations, link power budget, resistive budget, short wave length band, transmission distance for single mode fibers, Power penalties, nodal noise and chirping.

8 Hours

Unit - 7

WDM Concepts and Components: WDM concepts, overview of WDM operation principles, WDM standards, Mach-Zehender interferometer, multiplexer, Isolators and circulators, direct thin film filters, active optical components, MEMS technology, variable optical attenuators, tunable optical fibers, dynamic gain equalizers, optical drop multiplexers, polarization controllers, chromatic dispersion compensators, tunable light sources.

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6 Hours

Unit - 8

Optical Amplifiers and Networks – optical amplifiers, basic applications and types, semiconductor optical amplifiers, EDFA.

Optical Networks: Introduction, SONET / SDH, Optical Interfaces, SONET/SDH rings, High – speed light – waveguides.

6 Hours

Text books:

1. "Optical Fiber Communication", Gerd Keiser, 4th Ed., MGH, 2008.

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2. **"Optical Fiber Communications"**, John M. Senior, Pearson Education. 3rd Impression, 2007.

Reference Book:

1. **Fiber Optic Communication** - Joseph C Palais: 4th Edition, Pearson Education.