

Government Polytechnic Education Society, Manesar

Lesson Plan

Name of the Faculty : Devender Singh
Discipline : Electronics & Communication Engg.
Department : Electronics & Communication Engg.
Semester : 5th
Subject : Optical Fiber Communication
Lesson Plan Duration : 15 weeks(From sep.20 to Dec.20)

Work load (Lecture / Practical) per week (in hours) : Lectures-03, Practicals -03

Week	Theory		Practical	
	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
1st	1st	UNIT 1. Introduction:	1st (3Hours)	Setting up of fiber analog link
		Historical perspective		
	2nd	Basic communication systems, optical frequency range		
2nd	3rd	Advantages of optical fibre communication, application of fibre optic communication	2nd (3Hours)	Setting up to optic digital link
	4th	Electromagnetic spectrum used		
	5th	Advantages and disadvantages of optical communication.		
3rd	6th	Principle of light penetration	3rd (3Hours)	Measurement of various losses in optical fibers
	7th	Reflection, critical angle.		
	8th	UNIT 2. Optical Fibers and Cables:		
4th	9th	Fiber types construction	4th (3Hours)	Revision
	10th	Multimedia and monomode fibers		
	11th	Step index and graded index fibers		
5th	12th	Acceptance angle	5th (3Hours)	To observe and measure the splice or connector loss
	13th	Types of optical fiber cables		
	14th	Revision/ Seminar/ Expert lecture		
6th	15th	Assignment No. 1, Sessional Test - 1, Quiz	6th (3Hours)	To measure and calculate numerical aperture of optical fiber
	16th	UNIT 3. Losses in optical fiber cable:		
	17th	Absorption Losses, Bending loses.		
7th	18th	Scattering Losses, Radiation losses	7th (3Hours)	To observe characteristics of optical source
	19th	Compelling losses and Bending loses.		
	20th	Dispersion, Material dispersion		
8th	21st	wave guide dispersion	8th (3Hours)	To Splice the available optical fiber
	22nd	Modal dispersion, total dispersion and bit rate.		
	23rd	UNIT 4. Optical sources		
9th	24th	Characteristics of light source used in optical communication, principle of operation of LED	9th (3Hours)	To observe characteristics of optical detector
	25th	Different type of LED structures used and their brief description		
	26th	LED driving circuitry, Injection Laser diode		
10th	27th	Different types of injection laser diodes	10th (3Hours)	To Connectorise a fiber with connector at both ends
	28th	Comparison of LED and ILD, non semiconductor laser.		
	29th	UNIT 5. Optical Detector		
10th	30th	Characteristics of photo detectors used in optical communication	10th (3Hours)	
	29th	PIN Diode		
	30th	Avalanche photo diode (APD)		
10th	29th	Noise in Detectors	10th (3Hours)	
	29th	Revision/ Seminar/ Expert lecture		
	30th	Assignment No. 2, Sessionals Test - 2, Quiz		

Week	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
11th	31st	UNIT 6. Optical Amplifiers	11th (3Hours)	To identify and use various components and Tool used in optical fiber communication.
		Type of optical Amplifiers		
	32nd	Principle of operation of SOA		
	33rd	Types of SOA, EDFA		
12th	34th	Raman Amplifiers,	12th (3Hours)	Revision
	35th	Comparison of SOA,EDFA and Raman Amplifiers		
		Assignment No. 3, Sessionals Test - 3, Quiz		