IV B.Tech I Semester

15AEC61 - MICROWAVE & OPTICAL COMMUNICATIONS LAB

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Course Objectives:

1. *To verify the characteristics of various microwave components using microwave test bench.*
2. *Initiate an expose the newcomers to exciting area of optical communication*

PART-A: Microwave Lab - Any Seven (7) Experiments

1. Reflex Klystron Characteristics.
2. Gunn Diode Characteristics.
3. Attenuation Measurement.
4. Directional Coupler Characteristics.
5. VSWR Measurement.
6. Impedance Measurement.
7. Frequency and Wavelength measurements using slotted section.
8. Scattering parameters of Directional Coupler.
9. Scattering parameters of Magic Tee.
10. Radiation Pattern Measurement of horn Antennas (at least two antennas).

PART-B: Optical Fiber Lab - Any five (5) Experiments

1. Characterization of LED.
2. Characterization of Laser Diode.
3. Intensity modulation of Laser output through an optical fiber.
4. Measurement of Data rate for Digital Optical link.
5. Measurement of Numerical Aperture of the given fiber.
6. Measurement of losses for Analog Optical link.

Equipment required for Laboratories:

1.	Regulated Klystron Power Supply	6 nos.
2.	VSWR Meter	6 nos.
3.	Milli/Micro Ammetersn	10 nos.
4.	Multi meters	10 nos.
5.	CROs	8 nos.
6.	GUNN Power Supply, Pin Moderator	4 nos.
7.	Reflex Klystron with mount	10 nos.
8.	Crystal Diodes	50 nos.
9.	Micro wave components (Attenuation)	10 nos.
10.	Frequency Meter (Direct frequency)	10 nos.

11.	Slotted line with carriage	10 nos.
12.	Probe detector	10 nos.
13.	Wave guide shorts	6 nos.
14.	Pyramidal/conical Horn Antennas	4 nos.
15.	Rectangular to circular transition	2 nos.
16.	Directional Couplers with different (coupling factors)	5 nos.
17.	E, H, Magic Tees	2 nos. each.
18.	Circulators, Isolator	10 nos.
19.	Matched Loads	30 nos.
20.	Antenna Training System with Tripod and Accessories	1no.
21.	Fiber Optic Analog Trainer based LED	3 nos.
22.	Fiber Optic Analog Trainer based laser	2nos.
23.	Fiber Optic Digital Trainer	1 no.
24.	Fiber cables -	(Plastic, Glass)

Course Outcomes:

a. *Students acquire applications and testing of microwave components.*
b. *Students acquire knowledge on the various applications of optical fiber communications*
c. *Students develop confidence for self-education and ability for life -long learning.*