

Government Polytechnic for Women, Sirsa

Lesson Plan

Name of the Faculty : Monika , Lecturer Discipline (Theory & Practical)

Department : Electronics & Communication Engg.

Semester : 6th

Subject : Microwave and Radar Engineering

Lesson Plan Duration : 15 weeks

Workload(Lecture/Practical)perweek(inhours):Lectures-04,Practicals-03

Week	Theory		Practical	
	Lecture day	Topic (Including assignment/test)	Practical Day	Topic
1st	1st	Introduction about the subject/course and its syllabus	1st (3Hours)	Exp1- To measure electronics and mechanical tuning range of a reflex klystron. (Group 1 & Group 2)
	2nd	Unit-1-Introduction to Microwaves: Introduction to microwaves		
	3rd	Applications of microwaves		
	4th	Classification on the basis of its frequency bands(HF, VHF, UHF, L, S, C, X, Ku ,Ka)		
2nd	5th	Classification on the basis of its frequency bands(HF, VHF, UHF, L, S, C, X, Ku, Ka)	2nd (3Hours)	Exp1- To measure electronics and mechanical tuning range of a reflex klystron. (Group 1 & Group 2) - Revision & Viva
	6th	Revision/Seminar/Expert lecture		
	7th	Unit-2-Microwave Devices: Introduction to Microwave Devices		
	8th	Construction, characteristics, operating principles and Typical applications of: Multi cavity klystron		
3rd	9th	Multi cavity klystron	3rd (3Hours)	Exp2- To measure VSWR of a given load. (Group1&Group2)
	10th	Reflex klystron		
	11th	Multi-cavity magnetron		
	12th	Traveling wave tube		
4th	13th	Gunn diode	4th (3Hours)	Exp2- To measure VSWR of a given load. (Group1&Group2)-Revision & Viva
	14th	Impatt diode		
	15th	Revision/Seminar/Expert lecture		
	16th	Revision/Seminar/Expert lecture		
5th	17th	Assignment No.1, Class Test-1, Quiz-1	5th (3Hours)	Exp 3 - To measure the Klystron frequency by slotted section method. (Group1&Group2)
	18th	Unit-3-Waveguides: Rectangular waveguides and their applications		
	19th	Circular waveguides and their applications		
	20th	Mode of waveguide		
6th	21st	Mode of waveguide	6th (3Hours)	Exp 3 - To measure the Klystron frequency by slotted section method. (Group1&Group2)-Revision & Viva
	22nd	Propagation constant of a rectangular waveguide		
	23rd	Cut off wavelength, Guide wavelength and their relationship With free space wavelength		
	24th	Guide wave length and their relationship with free space Wavelength		
7th	25th	Impossibility of TEM mode in a waveguide	7th (3Hours)	Exp4- To measure the directivity and coupling of a directional coupler. (Group1&Group2)
	26th	Revision/Seminar/Expert lecture		
	27th	Unit-4-Microwave Components: Construction all features of Microwave Components		
	28th	Characteristics and application of tees		
8th	29th	Bends ,Match determination	8th (3Hours)	Exp4- To measure the directivity and coupling of a directional coupler. (Group1&Group2)-Revision & Viva
	30th	Twists, Detector mount		
	31st	Slotted section, Directional couple		
	32nd	Fixed and variable attenuator		

Week	Lecture day	Topic (Including assignment/test)	Practical Day	Topic
9th	33rd	Isolator, Circulator and Duplex	9th (3Hours)	Exp5-Toplo tradiationpatternofahorn antenna in horizontal and vertical planes. (Group 1 & Group 2)
	34th	Isolator, Circulator and Duplex		
	35th	Coaxial to waveguide adapter ,Horn antenna		
	36th	Revision/Seminar/Expert lecture		
10th	37th	AssignmentNo.2,ClassTest-2,Quiz-2	10th (3Hours)	Exp5-Toplo tradiationpatternofahorn antenna in horizontal and vertical planes. (Group 1 & Group 2) - Revision & Viva
	38th	Unit5:MicrowaveCommunicationsystems: Introduction		
	39th	Block diagram and working principles of microwave Communication link		
	40th	Block diagram and working principles of microwave Communication link		
11th	41st	Tropo scatter Communication-basic idea	11th (3Hours)	Exp6-To verify the properties of magic tee. (Group1&Group2)
	42nd	Tropo scatter Communication-basic idea		
	43rd	Tropo scatter Communication-basic idea		
	44th	Revision/Seminar/Expert lecture		
12th	45th	Unit6:RadarSystems: Introduction	12th (3Hours)	Exp6-To verify the properties of magic tee. (Group1&Group2)- Revision & Viva
	46th	Introduction to radar ,its various applications		
	47th	Radar range equation		
	48th	Applications		
13th	49th	Block diagram and operating principles of basic pulse radar	13th (3Hours)	Revision
	50th	Concepts of ambiguous range		
	51st	Radar area of cross-section and its dependence on frequency.		
	52nd	Radar area of cross-section and its dependence on frequency.		
14th	53rd	Block diagram and operating principles of CW(Doppler) Radar	14th (3Hours)	Revision
	54th	Block diagram and operating principles of FMCW radar		
	55th	Applications of CW&FMCW radar		
	56th	Block diagram and operating principles of MTI radar		
15th	57th	Radar display-PPI	15th (3Hours)	Revision &Internal Viva-(Group1& Group 2)
	58th	Revision/Seminar/Expert lecture		
	59th	Revision/Seminar/Expert lecture		
	60th	AssignmentNo.3,ClassTest-3,Quiz-3		