GOVT. POLYTECHNIC, MANESAR

LESSON PLAN

Name of the Faculty : Smt Sharmila (Sr. Lecturer, ECE)

Discipline : Electronics & Communication Engg.

Semester : 3rd

Subject : Principles of Communication Engineering

Lesson Plan Duration : Approx. 16 weeks (from July, 2018 to Nov, 2018)

Work Load (Lecture / Practical) per week (in hours): Lectures-03, Practicals-06

Week	Theory		Practical	
	Lecture Day	**Topic (Including assignment / test)**	**Practical day**	**Topic**
1st	1st	Introduction about the subject/course and its syllabus.	1st	**Group 1: Exp 1-** a) To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation. b) To measure the modulation index of the wave obtained in above practical.
	2nd	**Unit-1: Introduction** Need for modulation, frequency translation.	2nd	**Group 2: Exp 1-** a) To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation. b) To measure the modulation index of the wave obtained in above practical.
	3rd	Need for demodulation in communication systems.		
2nd	4th	Basic scheme of a modern communication system.	1st	**Group 1: Exp 1- contd. & Viva**
	5th	**Revision**	2nd	**Group 2: Exp 1- contd. & Viva**
	6th	**Unit-2: Amplitude modulation** Derivation of expression for an amplitude modulated wave.		
3rd	7th	Carrier and side band components, Modulation index	1st	**Group 1: Exp 2** a) To obtain an AM wave from a square law modulator circuit and observe waveforms. b) To measure the modulation index of the obtained wave form.
	8th	Spectrum and BW of AM Wave.	2nd	**Group 2: Exp 2** a) To obtain an AM wave from a square law modulator circuit and observe waveforms. b) To measure the modulation index of the obtained wave form.
	9th	Relative power distribution in carrier and side bands.		
4th	10th	Elementary idea of DSB-SC, SSB-SC, ISB and VSB modulations	1st	**Group 1: Exp 2 contd. & Viva**
	11th	Elementary idea of DSB-SC, SSB-SC, ISB	2nd	**Group 2: Exp 2 contd. & Viva**

		and VSB modulations contd.		
	12th	Comparison of various AM systems and areas of applications.		
5th	13th	**Revision & Assignment**	1st	**Group 1: Exp 3** To obtain an FM wave and measure the frequency deviation for different modulating signals.
	14th	**Unit-3: Frequency modulation** Expression for frequency modulated wave and its frequency spectrum	2nd	**Group 2: Exp 3** To obtain an FM wave and measure the frequency deviation for different modulating signals.
	15th	Modulation index, maximum frequency deviation and deviation ratio		
6th	16th	BW of FM signals, Carson's rule.	1st	**Group 1: Exp 3 Revision & Viva**
	17th	Effect of noise on FM carrier, Noise triangle	2nd	**Group 2: Exp 3 Revision & Viva**
	18th	Role of limiter, Need for pre-emphasis and de-emphasis, capture effect.		
7th	19th	Comparison of FM and AM in communication systems	1st	**Group 1: Exp 4** To obtain modulating signal from an AM detector circuit and observe the pattern for different RC time constants and obtain its optimum value for least distortion.
	20th	**Revision and class test/quiz.**	2nd	**Group 2: Exp 4** To obtain modulating signal from an AM detector circuit and observe the pattern for different RC time constants and obtain its optimum value for least distortion.
	21st	**Unit-4: Phase modulation** Derivation of expression for phase modulated wave, modulation index		
8th	22nd	Comparison with frequency modulation	1st	**Group 1: Exp 4 Revision & Viva**
	23rd	**Unit-5: Principles of AM Modulators** Circuit Diagram and working operation of Collector Modulator	2nd	**Group 2: Exp 4 Revision & Viva**
	24th	Base Modulator		
9th	25th	Square Law Modulator	1st	**Group 1: Exp 5** To obtain modulating signal from FM detector.
	26th	Balanced Modulator, **Home Assignment**	2nd	**Group 2: Exp 5** To obtain modulating signal from FM detector.
	27th	**Unit-6: Principles of FM Modulators** Working principles and applications of reactance modulator		
10th	28th	Varactor diode modulator	1st	**Group 1: Exp 5 Revision**
	29th	VCO Modulator	2nd	**Group 2: Exp 5 Revision**
	30th	Armstrong phase modulator		

11th	31st	Stabilization of carrier using AFC (Block diagram approach)	1st	**Group 1: Exp 6** To observe the sampled signal and compare it with the analog input signal. Note the effect of varying the sampling pulse width and frequency on the sampled output.
	32nd	**Revision and class test/quiz.**	2nd	**Group 2: Exp 6** To observe the sampled signal and compare it with the analog input signal. Note the effect of varying the sampling pulse width and frequency on the sampled output.
	33rd	**Unit-7: Demodulation of AM Waves** Principles of demodulation of AM wave		
12th	34th	Diode detector circuit	1st	**Group 1: Exp 6 contd. &Viva**
	35th	Concept of Clipping	2nd	**Group 2: Exp 6 contd. &Viva**
	36th	Formula for RC time constant for minimum distortion (no derivation)		
13th	37th	**Revision & Assignment**	1st	**Group 1: Exp 7** To observe and note the pulse amplitude modulated signal (PAM) and compare them with the corresponding analog input signal.
	38th	**Unit-8: Demodulation of FM Waves** Basic principles of FM detection using slope detector	2nd	**Group 1: Exp 7** To observe and note the pulse amplitude modulated signal (PAM) and compare them with the corresponding analog input signal.
	39th	Principle of working of Foster-Seeley discriminator		
14th	40th	Ratio detector	1st	**Group 1: Exp 7 contd.**
	41st	Block diagram of Phase locked Loop (PLL) FM demodulators	2nd	**Group 1: Exp 7 contd.**
	42nd	**Unit-9: Pulse Modulation** Statement of sampling theorem and elementary idea of sampling frequency for pulse modulation		
15th	43rd	Basic concept of time division multiplexing (TDM)	1st	**Group 1: Exp 8** To observe PPM and PWM signal and compare it with the analog input signal.
	44th	Frequency division multiplexing (FDM)	2nd	**Group 2: Exp 8** To observe PPM and PWM signal and compare it with the analog input signal.
	45th	Pulse Amplitude Modulation (PAM)		
16th	46th	Pulse Position Modulation (PPM)	1st	**Revision & Viva**
	47th	Pulse Width Modulation (PWM)	2nd	**Revision & Viva**
	48th	**Revision and class test/quiz.**		