Govt. Polytechnic Loharu Electronics and CommunicationEngineering LESSON PLAN

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|  | **NAME OF FACULTY** | | **:** | **Sh. Bhupinder Kumar** |
|  | **DISCIPLINE** |  | **:** | **Electronics and Communication Engg.** |
|  | **SEMESTER** |  | **:** |  |
|  |  | **3rd** |
|  | **SUBJECT** |  | **ADC** | |
|  | **LESSON PLAN DURATION:** | | | **15 weeks** |
|  | **WORK LOAD (LECTURE/ PRACTICAL): LECTURES - 03 , PRACTICALS – 03** | | | |

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| Week | Theory | | Practical | |
|  | Lectu re day | Topic | Prac tical Peri od | Topic |
| 1 | 1 | Introduction,Need for modulation | 1 | Introduction |
| 2 | frequency translation and  demodulation in communication systems | 2 |
| 3 | Basic scheme of a modern communication system. |
| 2 | 4 | Derivation of expression for an amplitude modulated wave. | 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 |
| 5 | Carrier and side band components. Modulation index. Spectrum and BW of  AM Wave. | 2 |
| 6 | Relative power distribution in carrier  and side bands. |
| 3 | 7 | Elementary idea of DSB-SC, SSB-SC ,their comparison, and areas of applications | 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 |
| 8 | Elementary idea of ISB and VSB modulations, their comparison, and  areas of applications | 2 |
| 9 | Comparison between DSB-SC, SSB-SC, ISB and VSB modulations |

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| 4 | 10 | Angle modulation,FM introduction,Expression for frequency  modulated wave | 1 | 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. |
| 11 | s frequency spectrum (without Proof and analysis of Bessel function) Modulation index, maximum frequency deviation and deviation ratio | 2 |
| 12 | BW of FM signals, Carson’s rule. |
| 5 | 13 | Effect of noise on FM carrier. Noise triangle, | 1 | REVISION/VIVA |
| 14 | Role of limiter, Need for pre-emphasis  and de-emphasis, capture effect. | 2 |
| 15 | Comparison of FM and AM in communication systems |
| 6 | 16 | REVISION /TEST | 1 | To obtain an FM wave and measure the frequency deviation for different modulating signals. |
| 17 | Phase modulation , Derivation of expression for phase modulated wave, | 2 |
| 18 | modulation index, comparison with  frequency modulation |
| 7 | 19 | Principles of AM Modulators,Principle, Circuit Diagram and working operation of  Collector | 1 | 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. |
| 20 | Principle, Circuit Diagram and working operation of Base Modulator | 2 |
| 21 | Principle, Circuit Diagram and working operation of Square Law Modulator |
| 8 | 22 | Principles of FM Modulators, Working principles and applications of reactance modulator | 1 | 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. |
| 23 | Working principles and applications of r  varactor diode modulator | 2 |
| 24 | Working principles and applications of  VCO - |
| 9 | 25 | Working principles and applications of Armstrong phase modulator. | 1 | To obtain modulating signal from FM detector. |
| 26 | Stabilization of carrier using AFC (Block diagram approach). | 2 |
| 27 | Demodulation of AM Wave |
| 10 | 28 | Principles of demodulation of AM wave using diode detector circuit | 1 | To observe the sampled signal and compare it with the analog input signal. Note the effect of varying the |

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|  | 29 | concept of Clipping and formula for RC time constant for minimum distortion (no derivation) | 2 | sampling pulse width and frequency on the sampled output. |
| 30 | REVISION |
| 11 | 31 | Demodulation of FM Waves- Basic principles of FM detection using slope detector | 1 | To observe and note the pulse amplitude modulated signal (PAM) and compare them with the corresponding analog input signal |
| 32 | Demodulation of FM Waves- Basic principles of FM detection using slope  detector | 2 |
| 33 | Principle of working of the following FM demodulators - Foster-Seeley  discriminator |
| 12 | 34 | Principle of working of the following FM demodulators- Ratio detector | 1 | To observe PPM and PWM signal and compare it with the analog input signal |
| 35 | Principle of working of the following FM demodulators- Ratio detector | 2 |
| 36 | REVISION |
| 13 | 37 | Pulse Modulation -INTRODUCTION | 1 | To observe PPM and PWM signal and compare it with the analog input signal |
| 38 | Statement of sampling theorem and elementary idea of sampling frequency  for pulse modulation | 2 |
| 39 | Basic concepts of time division multiplexing (TDM) and frequency division multiplexing (FDM) |
| 14 | 40 | Pulse Amplitude Modulation (PAM), Pulse Position Modulation (PPM), Pulse  Width Modulation (PWM). | 1 | REVISION |
| 41 | Pulse Width Modulation (PWM). | 2 |
| 42 | Pulse Position Modulation (PPM), Pulse Width Modulation (PWM). |
| 15 | 43 | **REVISION** | 1 | Revision/Viva voce |
| 44 | REVISION/TEST | 2 |
| 45 | REVISION/TEST |