Government Polytechnic Education Society, Manesar (Gurugram)

**LESSON PLAN**

**Name of the Faculty** : Smt Sharmila

**Discipline** : Electronics & Communication Engineering

**Semester** : 3rd

**Subject** : Analog & Digital Communication

**Lesson Plan Duration**: Approx.15 weeks (From 04.08.2025 to 26.11.2025)

**Work Load (Lecture / Practical) per week (in hours):** Lecture-03, Practical-04 Hrs per Group

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory**  | **Practical**  |
| **Lecture Day** | **Topic (Including assignment / test)** | **Practical day** | **Topic** |
|  1st   | 1st | Introduction about the subject/course and its syllabus | 1st | Introduction about the practical syllabus |
| 2nd | Introduction about the practical syllabus |
| 2nd | **Unit 1: Analog Communication**Need for modulation | 3rd | **Group 1: Exp. 1-** Observe wave forms at input and output of pulse code modulator with CRO. |
| 3rd | frequency translation and demodulation in communication systems | 4th | **Group 2: Exp. 1-** Observe wave forms at input and output of pulse code modulator with CRO. |
|  2nd   | 4th | Basic scheme of a modern communication system. | 5th | **Group 1:Exp. 1-** Observe wave forms at input and output of pulse code modulator with CRO. |
| 6th  | **Group 2:Exp. 1-** Observe wave forms at input and output of pulse code modulator with CRO. |
| 5th | **Unit II: Amplitude Modulation** - Derivation of expression for amplitude modulated wave. | 7th | **Group 1:Exp.** 2- To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation |
| 6th | Carrier and side band components. Modulation index. | 8th | **Group 2:Exp.** 2- To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation |
|  3rd   | 7th | Spectrum and BW of AM Wave. | 9th | **Group 1:Exp. 2** -To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation |
| 10th  | **Group 2:Exp.** 2-To observe an AM wave on CRO produced by a standard signal generator using internal and external modulation |
| 8th | Relative power distribution in carrier and side bands. | 11th  | **Group 1:Exp. 3 -**To measure the modulation index of the wave obtained in above practical |
| 9th | Elementary idea of DSB-SC, SSB-SC | 12th  | **Group 2:Exp. 3 -**To measure the modulation index of the wave obtained in above practical |
|  4th   | 10th | ISB and VSB modulations, Their comparison and areas of applications | 13th  | **Group 1:Exp. 3 -**To measure the modulation index of the wave obtained in above practical |
|  14th | **Group 2:Exp. 3 -**To measure the modulation index of the wave obtained in above practical |
| 11th | Revision & Assignment | 15th  | **Group 1:Exp. 4 -**To obtain an FM wave and measure the frequency deviation for different modulating signals. |
| 12th | Class test  | 16th  | **Group 2:Exp. 4 -** To obtain an FM wave and measure the frequency deviation for different modulating signals. |
| 5th | 13th | **UNIT III Frequency Modulation** -Expression for frequency modulated wave | 17th  | **Group 1:Exp. 4 -**To obtain an FM wave and measure the frequency deviation for different modulating signals. |
| 18th  | **Group 2:Exp. 4 -** To obtain an FM wave and measure the frequency deviation for different modulating signals. |
| 14th | its frequency spectrum (without Proof and analysis of Bassel function) Modulation index | 19th  | **Group 1:Exp. 5 -** Observe wave forms at input and output of QPSK modulators |
| 15th | maximum frequency deviation and deviation ratio | 20th | **Group 2:Exp. 5 -** Observe wave forms at input and output of QPSK modulators |
| 6th | 16th | BW of FM signals, Carson’s rule. | 21st  | **Group 1:Exp. 5 -** Observe wave forms at input and output of QPSK modulators |
| 22nd  | **Group 2:Exp. 5 -** Observe wave forms at input and output of QPSK modulators |
| 17th | Effect of noise on FM carrier. Noise triangle | 23rd  | **Group 1:Exp. 6 -**Observe wave forms at input and output of PSK modulators  |
| 18th | Role of limiter | 24th  | **Group 2:Exp. 6 -** Observe wave forms at input and output of PSK modulators  |
| 7th | 19th | Need for pre-emphasis and de-emphasis. | 25th | **Group 1:Exp. 6 -** Observe wave forms at input and output of PSK modulators  |
| 26th  | **Group 2:Exp. 6 -** Observe wave forms at input and output of PSK modulators  |
| 20th | capture effect, Comparison of FM and AM in communication systems | 27th  | **Group 1:Exp. 7 -** Observe wave forms at input and output of ASK modulators |
| 21st | Revision & Assignment | 28th  | **Group 2:Exp. 7-** Observe wave forms at input and output of ASK modulators |
| 8th | 22nd | Class test | 29th  | **Group 1:Exp. 7 -** Observe wave forms at input and output of ASK modulators |
| 30th  | **Group 2:Exp. 7 -** Observe wave forms at input and output of ASK modulators |
| 23rd | **UNIT IV:Digital Communication** Basic block diagram of digital and data communication systems. | 31st  | **Group 1:Exp. 8 -** Observe wave forms at input and output of FSK modulators |
| 24th | Their comparison with analog communication systems. | 32nd | **Group 2:Exp. 8 -** Observe wave forms at input and output of FSK modulators |
| 9th | 25th | Sampling theorem and its basic concept. Use of Sampling Theorem: | 33rd | **Group 1:Exp. 8 -** Observe wave forms at input and output of FSK modulators |
|  34th  | **Group 2:Exp. 8 -** Observe wave forms at input and output of FSK modulators |
| 26th | Introduction to PAM, PPM, PWM | 35th | Revision |
| 27th | Quantization and error of Quantization | 36th  | Revision |
|  10th   | 28th | PCM | 37th | Revision |
| 38th  | Revision |
| 29th | DPCM | 39th | Revision |
| 30th | DELTA | 40th | Revision |
| 11th | 31st | ADAPTIVE DELTA Modulation | 41st | Revision |
| 42nd | Revision |
| 32nd | concept of COMPANDING | 43rd | Revision |
| 33rd | Frequency hopping spread spectrum technique. | 44th | Revision |
| 12th | 34th | Revision class test | 45th | Revision |
| 46th  | Revision |
| 35th | **UNIT V: Digital Modulation Techniques** Basic block diagram and principle of working of the following: - Amplitude shift keying (ASK): | 47 th | Revision |
| 36th | Interrupted continuous wave (ICW), two tone modulation | 48th | Revision |
| 13th | 37th | Frequency Shift keying (FSK) | 49th  | Revision |
| 50th | Revision |
| 38th | Phase shift keying (PSK) | 51st  | Revision |
| 39th | Quadrature Phase Shift Keying (QPSK) | 52nd  | Revision |
| 14th | 40th | Revision & Assignment  | 53rd  | Revision |
| 54th  | Revision |
| 41st | Class test | 55th | Internal Viva |
| 42nd | Revision | 56th  | Internal Viva |
| 15th | 43rd | Revision | 57th  | Internal Viva |
| 58th  | Internal Viva |
| 44th | Revision | 59th  | Internal Viva |
| 45th | Revision | 60th  | Internal Viva |