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| The Maharaja Sayajirao University of Baroda<br>Polytechnic<br>Diploma in Electronics & Communication Engg.<br>(HPP) |                                                                                                                                                                                                                                                                     |                                 | ACADEMIC YEAR<br>2022-2023   |           |     |
| Year                                                                                                                | II                                                                                                                                                                                                                                                                  | ANALOG COMMUNICATION (ELE3336 ) | Lecture /Lab Hrs<br>per week | 4/2       |     |
| Semester                                                                                                            | I                                                                                                                                                                                                                                                                   |                                 | Max marks                    | 100       |     |
| Pre-Requisite: Basic Mathematics, Basic Electronics                                                                 |                                                                                                                                                                                                                                                                     |                                 |                              |           |     |
| CO1                                                                                                                 | Interpret signal representations using Fourier series, Fourier transforms, and convolution.                                                                                                                                                                         |                                 |                              |           |     |
| CO2                                                                                                                 | Evaluate transmission characteristics, filtering effects, and signal power–energy.                                                                                                                                                                                  |                                 |                              |           |     |
| CO3                                                                                                                 | Analyse AM schemes, their demodulation methods, AM transmitters, and FDM.                                                                                                                                                                                           |                                 |                              |           |     |
| CO4                                                                                                                 | Examine FM/PM techniques, detection methods, spectra, and FM transmitters.                                                                                                                                                                                          |                                 |                              |           |     |
| CO5                                                                                                                 | Explain communication receivers, performance parameters, pulse modulation methods, TDM, and noise effects.                                                                                                                                                          |                                 |                              |           |     |
|                                                                                                                     |                                                                                                                                                                                                                                                                     |                                 |                              |           |     |
| BT                                                                                                                  | 1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation                                                                                                                                                                                      |                                 |                              |           |     |
| COURSE CONTENT/SYLLABUS                                                                                             |                                                                                                                                                                                                                                                                     |                                 |                              |           |     |
| Unit                                                                                                                | Unit Name                                                                                                                                                                                                                                                           |                                 | Hrs                          | Weightage | CO  |
| 1                                                                                                                   | Signal Analysis: Fourier Series representation of periodic signals, Fourier transform, Properties of Fourier transform, Convolution                                                                                                                                 |                                 | 8                            | 10        | CO1 |
| 2                                                                                                                   | Transmission of signals through systems: Criteria for distortion less transmission, ideal filters, distortions in practical systems, power and energy of signals.                                                                                                   |                                 | 8                            | 12        | CO2 |
| 3                                                                                                                   | Amplitude modulation: Need of modulation, AM DSB-SC, SSB-SC and vestigial side band modulation and demodulation, AM transmitter (broadcast and low power), FDM.                                                                                                     |                                 | 10                           | 20        | CO3 |
| 4                                                                                                                   | Angle modulation: FM and PM, reactance FET modulator Armstrong method, PLL detector, Stereophonic FM, Spectrum of FM, Narrow band and wide band FM, FM transmitter (broadcast and low power).                                                                       |                                 | 10                           | 20        | CO4 |
| 5                                                                                                                   | Radio receivers: TRF and super-heterodyne receiver, AGC, FM receiver, sensitivity, selectivity, image frequency rejection measurements, block schematic of communication receiver and its special features. Transceivers for wireless mobile communication devices. |                                 | 10                           | 18        | CO5 |
| 6                                                                                                                   | Analog pulse modulation: Sampling theorem, PAM, PWM, PPM, generation & detection of these pulse modulated signals, TDM, Noise in communication systems.                                                                                                             |                                 | 10                           | 20        | CO5 |
|                                                                                                                     |                                                                                                                                                                                                                                                                     |                                 | 56                           | 100       |     |
| REFERENCE BOOKS:                                                                                                    |                                                                                                                                                                                                                                                                     |                                 |                              |           |     |
| 1.                                                                                                                  | Modern Analog & Digital Communication Systems By Lathi B.P John Wiley Publications                                                                                                                                                                                  |                                 |                              |           |     |
| 2.                                                                                                                  | Modern Analog & Digital Communication Systems By Lathi B.P John Wiley Publications                                                                                                                                                                                  |                                 |                              |           |     |
| 3.                                                                                                                  | Introduction to Analog & Digital Communication Systems By Haykin Simon                                                                                                                                                                                              |                                 |                              |           |     |