

The Maharaja Sayajirao University of Baroda Polytechnic Diploma in Electronics & Communication Engg. (HPP)			ACADEMIC YEAR 2022-23		
Year	II	DIGITAL COMMUNICATION & NETWORKING (ELE3432)	Lecture/Lab Hrs per week	4/2	
Semester	II		Max marks	100	
Pre-Requisite: Basic Mathematics, Basic Electronics					
CO1	Explain digital communication concepts and compare analog vs. digital systems.				
CO2	Analyse PCM, TDM, delta modulation, and receiver performance in noise.				
CO3	Evaluate baseband and passband schemes including line coding, ASK/FSK/PSK, QPSK, QAM, and spread-spectrum methods.				
CO4	Describe transmission methods used in ISDN, xDSL, LANs, and Wi-Fi.				
CO5	Apply error-control coding and data-link protocols such as block codes, cyclic codes, ARQ, sliding window, HDLC, and PPP.				
BT	1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation				
COURSE CONTENT/SYLLABUS					
Unit	Unit Name		Hrs	Weightage	CO
1	Introduction to digital communication. Comparison of analog and digital communication. Advantages and disadvantages of digital communication.		8	13	CO1
2	PCM-TDM, Delta modulation, generalized digital communication system, geometric interpretation of signals, performance of matched filter receiver and correlator receive in the presence of white noise. Threshold setting and error probability.		8	13	CO2
3	Base band transmission: Line coding fundamentals, transmission formats, spectral requirements. Pass-band transmission methods: Binary ASK, PSK and FSK, Quadrature multiplexing, QPSK and QAM methods, Geometric interpretation of signals, Spread spectrum methods: Properties of PN sequences, DSSS system, slow and fast FHSS. Block diagrams and performance analysis, carrier and symbol synchronization.		10	20	CO3
4	Case studies of transmission methods in telecommunications and computer networking. For example ISDN, XDSL, 802.3 LANs, WiFi LANs		10	20	CO4
5	Error control coding: Shannon’s channel capacity theorem, Linear block codes generation and decoding, Hamming distance considerations, Cyclic codes and their applications,		8	14	CO5
6	Data link layer protocols; ARQ and sliding window protocols; flow control methods; elementary analysis of protocol correctness and performance; Case studies of HDLC and PPP.		10	20	CO4, CO5
			54	100	
REFERENCE BOOKS:					
1.	Modern Analog & Digital Communication Systems By Lathi B.P, John WileyEdition				
2.	Digital communication, By Proakis John, Tata- McGraw-Hill,(3e)				
3.	Digital communication , By Haykin Simon, WileyEdition				
4.	Communication systems By Haykin. Simon, Wiley,(4e)				