PVP 20

Code: 20EC3501

III B.Tech - I Semester – Regular / Supplementary Examinations
NOVEMBER 2024

DIGITAL COMMUNICATIONS

(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
		UNIT-I			
1	a)	Explain about functional description of Digital Communication system with neat sketches.	L2	CO1	7 M
	b)	In a Binary PCM system, the output signal to quantization noise ratio is to be held at 40dB. Then determine the no. of required levels and also determine output signal to quantization noise ratio.	L3	CO1	7 M
		OR			
2	a)	Summarize about A-Law and μ-Law Companding.	L2	CO1	7 M
	b)	Outline about ADM with neat sketches.	L2	CO1	7 M

		UNIT-II			
3	a)	Explain about Coherent detection of FSK with neat sketches.	L2	CO1	7 M
	b)	The bitstream 1011100111 is to be transmitted using DPSK. Then Determine encoded and transmitted phase sequence along with the received output.	L5	CO1	7 M
		OR			
4	a)	Analyze the working of M-ary signaling.	L4	CO1	7 M
	b)	Explain about QPSK with neat sketches.	L2	CO1	7 M
		UNIT-III			
5	a)	What is the Need of spread spectrum modulation?	L1	CO2	7 M
	b)	Analyze about DSSS with neat sketches.	L4	CO2	7 M
		OR			
6		Summarize about the Tx and Rx of FHSS with neat diagrams.	L2	CO2	14 M
		UNIT-IV			
7	a)	Determine the expressions of Joint and Conditional entropies.	L5	CO3	7 M
	b)	Explain about Shannon Hartley theorem.	L2	CO3	7 M
		OR			
8	a)	Prove that I (X, Y) = H (X) – H (X/Y).	L2	CO3	7 M

	b)	Determine the Huffman code for the following messages with probabilities 0.3, 0.2, 0.15, 0.15, 0.1 and 0.1. Find the coding efficiency and redundancy.	L5	CO3	7 M
		UNIT-V			
9	a)	Determine the generator and Parity check matrices for a (6,3) LBC code.	L5	CO4	7 M
	b)	For a (7,4) Convolution code, g1=1+X, g2=1+X^2, then determine the Encoded outputs for the sequence 1100 and verify these output states with tree diagram.	L5	CO4	7 M
		OR			
10		Design and verify the Convolutional encoder with two flip-flops, code rate =1/2 with input message 11011101. Then design and explain 1. The Encoder diagram 2. The Tree diagram 3. The Trellis diagram 4. The State diagram	L6	CO4	14 M