Code No: P18ECT10

HALL TICKET NUMBER

PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)
III B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH/APRIL – 2023
DIGITAL COMMUNICATIONS
(ECE BRANCH)

Time: 3 hours Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answer all the questions in Part-A (5X2=10M)

Q.No.		Questions	Marks	CO	KL
1.	a)	Draw the basic block diagram of digital communication system.	[2M]	1	2
	b)	Write the equations for coherent BPSK signals.	[2M]	2	2
	c)	Differentiate coherent and non-coherent detection.	[2M]	3	2
	d)	Define entropy and list out its properties.	[2M]	4	1
	e)	Define minimum distance of a linear code.	[2M]	5	1

PART-B

Answer One Question from each UNIT (5X10=50M)

Q. No.		Questions	Marks	CO	KL
		UNIT-I			
2.	a)	Explain the operation of pulse code modulation system with neat sketch.	[5M]	1	4
	b)	Discuss the sampling and quantization processes.	[5M]	1	3
		OR			
3.	a)	Discuss the companding process in PCM systems.	[5M]	1	3
	b)	Explain the delta modulator and demodulator with neat diagrams.	[5M]	1	2
		UNIT-II			
4.	a)	Draw and explain the coherent BPSK with relevant expressions.	[5M]	2	2
	b)	Explain the modulation and detection of QPSK with neat diagram.	[5M]	2	2
		OR			
5.	a)	Explain the bandwidth efficiency of M-ary Phase shift keying system.	[5M]	2	2
	b)	Discuss the transmitter and receiver of BFSK.	[5M]	2	2
		UNIT-III			
6.	a)	Explain the baseband signal receiver.	[5M]	3	2
	b)	Discuss the coherent system of signal reception.	[5M]	3	4
		OR			
7.	a)	Explain the integrate and dump circuit and find its probability of error.	[5M]	3	4
	b)	What is optimum filter and derive the probability of error of it.	[5M]	3	2
		UNIT-IV			
8.		A memory less source emits six messages with probabilities 0.3, 0.25, 0.15, 0.12, 0.1 and 0.08. Find the Huffman code. Determine its average word length, the efficiency and the redundancy.	[10M]	4	2
		OR			

9.	a)	Illustrate the concept of entropy and its properties.	[5M]	4	4
	b)	A DMS X has five equally likely symbols. Construct a Huffman code for X and calculate the efficiency of the code.	[5M]	4	4
		UNIT-V			
10.		For k=3 and rate 1/3 code generated by: $g_1(x)=1+x^2, g_2(x)=1+x \wedge g_1(x)=1+x+x^2$, draw the state diagram, tree diagram and trellis diagram.	[10M]	5	3
		OR			
11.		Consider (7, 4) linear code whose generator matrix is $G=\begin{bmatrix}1000:101\\0100:111\\0010:110\\0001:011\end{bmatrix}$. i) Find all code vectors of this code, ii) Find the parity check matrix for this	[10M]	5	4

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