Hall Ticket Number :										

R-15

Code: 5G351

III B.Tech. I Semester Supplementary Examinations February 2022

Digital Communication

(Electronics and Communication Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Draw the block diagram of digital communication system and explain each block in detail.	7M		
	b)	Find the output signal power due to Quantization noise in a PCM system.	7M		
		OR			
2.	a)	Consider a signal x(t), having $\|X_{max}\| = 16$, $\sigma_x^2 = 9$ and band-limited to 4kHz. Calculate the sampling rate and PCM data rate for $S/N_q \geq 40$dB.	7M		
	b)	With a neat block diagram, explain the operation of delta modulation system.	7M		
		UNIT-II			
3.	a)	Explain with neat diagrams coherent BFSK transmitter and receiver. Also explain single space diagram for coherent BFSK systems.	7M		
	b)	The bit stream d(t) is to be transmitted using DPSK. If d(t) is 001010011010. Determine b(t) and draw the waveforms.	7M		
		OR			
4.	a)	Draw and explain the operation of transmitter and receiver of a coherent FSK.	7M		
	b)	The bit stream 001010011010 is to be transmitted using BFSK. Sketch the transmitted waveform.	7M		
		UNIT-III			
5.	a)	What is mutual information? Derive mutual information I(*xi, yj*).	6M		
	b)	Calculate the bandwidth limits of Shannon-Hartley theorem.	8M		
		OR			
6.	a)	Explain Huff-man coding with an example.	7M		
	b)	Explain Shannon-Fano algorithm with an example.	7M		
		UNIT-IV			
7.		Explain about block codes in which each block of k message bits encoded into block of n>k bits with an example.	14M		
		OR			
8.		Prove $CH^T = 0$ where C is code word and H is parity check matrix.	14M		
		UNIT-V			
9.		State and prove the important theorem of cyclic code to generate code polynomial $V(x) = r(x) + x^{n-k} D(x)$.	14M		
		OR			
10.		For a non-systematic rate ½ code given by g(1,1)=(1,1,1), g(1,2)=(1,0,1) Draw the tree graph, trellis and state diagram.	14M		

****END****