Q.P. Code: 16EC421 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year II Semester Regular & Supplementary Examinations October-2020

DIGITAL COMMUNICATIONS

(Electronics & Communication Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	**a**	State sampling theorem.	**5M**
	b	Consider an audio signal consisting of the sinusoidal term given as x (t) =3cos (500πt) i) Determine the SNR noise ratio. When this is quantized using 10 bits PCM. ii) How many bits of quantization are needed to achieve a SNR ratio of at least 40dB?	**7M**
		OR	
2		Explain the delta modulation system with suitable diagrams.	**12M**

UNIT-II

3	**a**	Explain the matched filter.	**6M**
	b	Derive the properties of matched filter.	**6M**
		OR	
4	**a**	Derive the mathematical expression for raised cosine spectrum.	**6M**
	b	Explain the rectangular pulse for a matched filter.	**6M**

UNIT-III

5	**a**	Define the following i) Additive White Gaussian noise. ii) Orthogonality. iii) Signal vector. iv) Synthesizer.	**3M** **3M** **3M** **3M**
		OR	
6	**a**	Describe the probability error in correlation receiver?	**7M**
	b	Explain signal representation of a signal N=2 and M=3.	**5M**

UNIT-IV

7	**a**	Sketch with a neat diagram of M-array PSK transmitter and receiver.	**6M**
	b	What is the bandwidth of M-array PSK?	**6M**
		OR	
8	**a**	Describe the generation and detection of DPSK.	**6M**
	b	Derive the probability of error for DPSK.	**6M**

UNIT-V

9	**a**	What are the types of parity check codes explain with neat diagrams?	**6M**
	b	Write the advantages and disadvantages of parity check codes.	**6M**
		OR	
10	**a**	Draw and explain the block diagram of ARQ system in detail	**6M**
	b	Write about various types of ARQ systems.	**6M**

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