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

Question Paper Code: 94405

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Fourth Semester

Electronics and Communication Engineering

19UEC405– Analog And Digital Communication

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The square law modulator consists _____ CO1-U

   (a) Adder (b) Non liner device (c) Band pass filter (d) All of the above

2. The SNR in delta modulation is _____ CO2-App

   (a) Fair (b) Poor (a) Good (b) None of the above

3. The main objective of Trellis coding is CO1-U

   (a) To narrow the Bandwidth (b)To simplify the modulation

   (c) To increase the data rate (d) To reduce the error rate

4. The maximum bandwidth is occupied by CO1- U

   (a) ASK (b) BPSK (c) FSK (d) none of these

5. The period of a PN sequence produced by a linear m stage shift register cannot exceed _____ symbols. CO1- U

   (a) 2m (b) m (c) 2m (d) 2m-1

PART – B (5 x 3= 15 Marks)

6. A 400 watt carrier is modulated to a depth of 75 percent. Calculate the total power in the modulated wave? CO2- App

7. State sampling theorem CO1- U

8. What is information rate CO1- R

9. Write the expression for bit error rate for coherent PSK CO1-U

10. What are the applications of spread spectrum techniques CO1-U

PART – C (5 x 16= 80 Marks)

11.	(a)	Explain the generation and detection of AM signals with neat diagrams.	CO1- U	(16)
		Or		
	(b)	Derive the expression of an AM wave, modulation index, total power and Transmission efficiency	CO1- U	(16)
12.	(a)	The television signal with a bandwidth of W=fm=4.2MHz is transmitted using PCM. The number of quantization level is 512. The amplitude of signal is varied from 7V to -7V. Calculate (i) Nyquist rate (ii) code word length or number of bits (iii) transmission bandwidth (iv) final bit rate (v) step size	CO2- App	(16)
		Or		
	(b)	Consider the input data sequence 1011011. Sketch the waveforms for each of these sequences using following methods . (i) Unipolar NRZ (ii) Unipolar RZ (iii) Polar NRZ, (iv) Polar RZ (v) Bipolar NRZ (vi) Bipolar RZ (vii) Manchester (viii) Differential Manchester (Line Coding)	CO2- App	(16)
13.	(a)	A discrete memoryless source has 6 symbols s1,s2,s3,s4,s5,s6 with probabilities 0.4,0.1,0.2,0.1,0.1 and 0.1 respectively. Construct a Huffman code and calculate its efficiency	CO3- App	(16)
		Or		
	(b)	Consider the generator polynomial for a (7,3) cyclic code defined by g(p) =P4+P3+P2+1 (a) Find the encoding table for the cyclic code. (b) What is the minimum distance dmin of the code.	CO3- App	(16)
14.	(a)	Explain the digital modulation techniques in which digital data represents variations in the amplitude of carrier wave	CO1- U	(16)
		Or		
	(b)	Explain the digital modulation techniques in which the phase of the modulated signal is shifted relative to the previous signal element	CO1- U	(16)
15.	(a)	Explain in detail the characteristics of PN sequence	CO1- U	(16)
		Or		
	(b)	Differentiate direct sequence and frequency hopping spread spectrum techniques	CO1- U	(16)