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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
 [AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
 Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 7011

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024

Fifth Semester

Electronics and Communication Engineering

U19EC521- ANALOG AND DIGITAL COMMUNICATION

(Regulation 2019)

(Common to Biomedical Engineering)

Time : Three Hours

Maximum : 100 Marks

Answer ALL the questions

Knowledge Levels	K1 – Remembering	K3 – Applying	K5 - Evaluating
(KL)	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What is modulation and mention the need for modulation?	2	K2	CO1
2.	Compare Amplitude modulation and Angle modulation.	2	K1	CO1
3.	Define thermal noise. Give the expression for the thermal noise voltage across a resistor.	2	K2	CO2
4.	Define signal to noise ratio.	2	K1	CO2
5.	Distinguish natural and flat top sampling.	2	K1	CO3
6.	What is the SNR of PCM system if number of quantization levels is 2^8 ?	2	K2	CO3
7.	List the properties of line codes.	2	K2	CO4
8.	Draw the Eye pattern and indicate how ISI is measured from it.	2	K1	CO4
9.	If the Baud rate of a 64 QAM signal is 2000, find the bit rate.	2	K2	CO5
10.	Enumerate the properties of non Coherent Receiver.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	With the help of mathematical expressions explain about amplitude generation, its generation and detection.	13	K2	CO1
	(OR)			
b)	Enumerate the coherent detection method for DSB SC and SSB SC, when there is a phase mismatch.	13	K2	CO1
12. a)	Write a short notes on		K3	CO2
	i. Shot noise and its power spectral density.	7		
	ii. Thermal noise and its power spectral density.	6		
	(OR)			
b)	Define narrow band noise and explain the representation of narrow band noise in terms of In-phase and Quadrature components.	13	K3	CO2
13. a)	i. Compare uniform and non uniform quantization techniques.	7	K2	CO3
	ii. What is the effects of Aliasing? How it is reduced?	6	K2	CO3
	(OR)			
b)	Illustrate the operating principle of PCM system and also explain the types of Time division multiplexing.	13	K2	CO3
14. a)	Derive the expression for the Nyquist criterion for distortion less baseband transmission in the absence of noise in terms of time domain and frequency domain.	13	K3	CO4
	(OR)			
b)	Represent 100111010 using following digital data format	13	K3	CO4
	i. Bipolar RZ			
	ii. Bipolar NRZ			
	iii. AMI NRZ			
	iv. Split phase Manchester			
	v. On-Off			
15. a)	Compare and contrast the performance parameters of all the digital modulation Techniques.	13	K2	CO5
	(OR)			
b)	Explain the working of BPSK transmitter and receiver with necessary equations and block diagram.	13	K2	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	i. Explain the role of compander in PCM systems.	6	K2	CO3
	ii. Explain in detail about Delta modulation and demodulation technique.	9	K2	CO3
(OR)				
b)	Explain the transmitter and receiver structure of QPSK system with relevant expressions and figures. Also discuss about the bandwidth consideration of QPSK.	15	K2	CO5
