B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024
Fourth Semester
Computer and Communication Engineering
20CCPC401– ANALOG AND DIGITAL COMMUNICATION
Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks	K–Level	CO
1.	List the types of Analog Modulation techniques.	2	K1	CO1
2.	Define DSBSC.	2	K1	CO1
3.	State angle modulation.	2	K1	CO2
4.	Briefly discuss about FM modulation index.	2	K1	CO2
5.	List the types of sampling techniques.	2	K1	CO3
6.	Define companding.	2	K1	CO3
7.	Compare ASK and BPSK modulation techniques.	2	K2	CO4
8.	Briefly discuss the advantage of using DPSK over conventional PSK modulation scheme.	2	K1	CO4
9.	State the source coding theorem and its significance in data compression.	2	K1	CO5
10.	Explain linear block codes. Provide an example.	2	K2	CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

			Marks	K–Level	CO
11.	a)	Discuss the need for modulation in communication systems with examples.	13	K2	CO1
		OR			
	b)	Explain the working principle of TRF (Tuned Radio Frequency) receiver and Super heterodyne receiver.	13	K2	CO1
12.	a)	Describe in detail the deviation sensitivity and FM & PM waveforms with neat diagram.	13	K2	CO2
		OR			
	b)	Summarize the working principles of direct FM modulators with necessary diagram.	13	K2	CO2
13.	a)	Explain the principles of pulse code modulation (PCM), focusing on sampling, quantization, and encoding and the signal-to-quantization noise ratio in PCM systems.	13	K2	CO3
		OR			

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   *12648*

b)	Discuss the principles and applications of vocoders (voice encoders/decoders) in telecommunication system.	13	K2	CO3

14. a) Analyze and explain the probability of error and bit error rate (BER) performance of digital modulation schemes in detail. — 13   K2   CO4

OR

b) Discuss the different network topologies with necessary diagrams. — 13   K2   CO4

15. a) Elaborate the need for channel coding and analyze its process. — 13   K4   CO5

OR

b) Summarize the concept of mutual information and its role in quantifying the amount of information transmitted over a communication channel. — 13   K2   CO5

PART - C (1× 15 = 15 Marks)

16. a) Explain the concept of frequency reuse in cellular telephony and its significance in optimizing spectrum utilization. Discuss how FDMA and CDMA systems implement frequency reuse. — 15   K3   CO6

OR

b) Compare and contrast the features and capabilities of 2G, 3G, and 4G technologies in terms of data rates, network architecture, spectrum efficiency, and application support. Discuss the technological advancements that led to the transition from one generation to the next. — 15   K3   CO6