

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech I Semester Supplementary Examinations, December – 2024

DIGITAL COMMUNICATIONS

(ELECTRONICS AND COMMUNICATION ENGINEERING)

Time: 3 Hours**Max. Marks: 75****Section – A (Short Answer type questions)****(25 Marks)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. What are the advantages of digital communication systems over analog systems?	CO1	L1	2M
2. Define Quantization error.	CO1	L1	3M
3. Define Amplitude Shift Keying.	CO2	L1	2M
4. State the significance of probability of error in data transmission.	CO2	L2	3M
5. What is meant by entropy?	CO3	L1	2M
6. Define mutual information and its importance.	CO3	L1	3M
7. What is the purpose of a parity check matrix in linear block codes?	CO4	L2	2M
8. State the error correction capability of Hamming codes.	CO4	L2	3M
9. What is the use of spread spectrum modulation?	CO5	L1	2M
10. Differentiate between DSSS and FHSS modulation techniques.	CO5	L2	3M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Explain the process of quantization in a PCM system. Illustrate its impact on signal quality with an example.	CO1	L2	10M
OR			
B) Discuss the drawbacks of Delta Modulation and explain how Adaptive Delta Modulation addresses these issues.	CO1	L2	10M
12. A) Calculate the probability of error for a matched filter receiver given a specific signal-to-noise ratio.	CO2	L3	10M
OR			
B) Explain about QPSK Modulation and demodulation.	CO2	L2	10M
13. A) Explain the properties of mutual information and its role in determining channel capacity.	CO3	L2	10M
OR			
B) A discrete source emits 5 symbols with probabilities 0.4, 0.2, 0.2, 0.1, and 0.1. Calculate: i) The entropy of the source. ii) The average information per symbol.	CO3	L3	10M
14. A) Explain the process of encoding and decoding in Hamming codes with an example.	CO4	L2	10M
OR			
B) Write the advantages and limitations of convolutional codes compared to block codes.	CO4	L2	10M

15. A) Explain the concept of Direct Sequence Spread Spectrum (DSSS) modulation. CO5 L2 10M
- OR**
- B) Draw the block diagram of a Code Division Multiple Access (CDMA) system and explain its working. CO5 L2 10M