

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech I Semester Supplementary Examinations, June/July - 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. Write the drawbacks of delta modulation.	CO1	L1	2M
2. Draw the block diagram of digital communication system.	CO1	L2	3M
3. What is meant by ASK?	CO2	L1	2M
4. Draw the base band signal receiver block diagram.	CO2	L2	3M
5. Define Entropy.	CO3	L1	2M
6. What is meant by coding efficiency?	CO3	L2	3M
7. Write the advantages of error control codes.	CO4	L1	2M
8. Illustrate the algebraic structure of the binary cyclic codes with an example.	CO4	L2	3M
9. Write the applications of Spread Spectrum modulation.	CO5	L1	2M
10. What is the need for synchronisation in spread spectrum?	CO5	L2	3M

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

11. A) What is slope overload distortion and granular noise in Delta Modulation? How is it removed in ADM? CO1 L3 10M
- OR**
- B) Draw the block diagram of DPCM system and explain each block along with the necessary equations. CO1 L2 10M
12. A) Explain the generation and demodulation of BPSK signal with a neat block diagram. CO2 L2 10M
- OR**
- B) What is an optimum filter? Derive the expression for error probability of optimum filter. CO2 L3 10M
13. A) Define mutual information and write its properties. CO3 L2 10M
- OR**
- B) With an example explain the procedural steps of Huffman coding. CO3 L2 10M
14. A) An error control code has the following generator matrix: CO4 L3 10M
- $$G = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}_{3 \times 6}$$
- i) Construct the parity check matrix H.
 ii) Construct the Syndrome table.
 iii) If the received sequence is 101101, identify the message sequence.
- OR**
- B) Illustrate sequential decoding algorithm for the decoding of convolutional codes. CO4 L3 10M

15. A) Explain how PN Sequences are generated. What are their properties? CO5 L2 10M
OR
B) Explain the principle of Frequency Hopping Spread Spectrum. CO5 L2 10M