



QP CODE: 25050674



Reg No :

Name :

MSc DEGREE (CSS) EXAMINATION DECEMBER 2025

First Semester

M Sc ELECTRONICS

Core Courses - EL010104 - DIGITAL COMMUNICATION TECHNIQUES

2019 Admission Onwards

D18788E7

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. What is the relationship between uncertainty and information?
2. List out various parameters involved in Huffman coding.
3. Define channel capacity.
4. Explain the advantages and application of cyclic codes.
5. What do you mean by Viterbi algorithm?
6. What are the different modes of operation in DES?
7. Explain the term modulation Index.
8. Define frequency deviation in FSK.
9. What are the properties of PN sequence?
10. Explain the processing gain in spread spectrum.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Describe Kraft-McMillan inequality theorem.
12. Write note on discrete memory less channel.
13. Prove the properties of syndrome for cyclic codes.
14. Explain direct and arbitrated digital signature.
15. Compare QPSK, MSK and GMSK modulation techniques.





16. Define probability of error in ASK and FSK.
17. What is the difference between fast hopping and slow hopping?
18. Describe acquisition and tracking in spread spectrum.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Generate the codewords for an example of a (6,3) code using linear block code encoder. Find the minimum Hamming distance.
20. A convolution code is described by generator sequence $G1 = (1, 1, 1)$ and $G2 = (1, 0, 1)$ (a) Draw the encoder for this code (b) Draw the state transition diagram for this code and (c) Draw the trellis diagram for this code.
21. Draw the block diagram of QPSK modulator, demodulator and explain the principle of operation.
22. What is Spread Spectrum Techniques? Explain in detail about Direct Sequence Spread Spectrum Techniques with necessary diagrams.

(2×5=10 weightage)

