



Paper ID : 201814

Printed Page: 1 of 1

Subject Code: HITAC401

Roll No: ,

BTECH

(SEM. IV) THEORY EXAMINATION 2025-26

ADVANCED DIGITAL COMMUNICATION TECHNIQUES

TIME: 3 HRS

M.MARKS: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2x10 = 20

QNo.	Question
(a)	Define communication signal.
(b)	What is orthogonal expansion of signals?
(c)	Define bit error rate.
(d)	Define Digital PAM signal.
(e)	Define Quadrature Phase Shift Keying.
(f)	Write down the applications of MSK.
(g)	Define Linear Block Code.
(h)	Define tree diagram in convolutional coding.
(i)	What is spread spectrum modulation?
(j)	Define pseudo-noise sequence.

SECTION B

2. Attempt any three of the following:

10 x 3 = 30

(a)	Discuss vector space concepts used in communication systems.
(b)	Explain Differential Phase Shift Keying.
(c)	Explain M ary Phase Shift Keying with signal constellation diagrams.
(d)	Explain the different types of error control coding techniques used in digital communication systems.
(e)	Describe slow and fast frequency hopping techniques.

SECTION C

3. Attempt any one part of the following:

10 x 1 = 10

(a)	Discuss the importance of signal space concepts in digital communication.
(b)	Compare ASK, FSK, and PSK modulation techniques.

4. Attempt any one part of the following:

10 x 1 = 10

(a)	Explain Binary Phase Shift Keying modulation and demodulation with block diagrams and waveforms.
(b)	Discuss the advantages, disadvantages, and applications of various PSK techniques.

5. Attempt any one part of the following:

10 x 1 = 10

(a)	Explain Minimum Shift Keying and discuss its advantages in digital communication systems.
(b)	Discuss the comparison of digital modulation techniques with suitable performance parameters.

6. Attempt any one part of the following:

10 x 1 = 10

(a)	Describe convolutional codes and explain their encoder structure.
(b)	Compare linear block codes, cyclic codes, and convolutional codes.

7. Attempt any one part of the following:

10 x 1 = 10

(a)	Discuss applications of spread spectrum communication systems.
(b)	Compare DSSS and FHSS techniques.

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