

Exam.Code:0969
Sub. Code: 34529

2125
M.E. (Electronics and Communication Engineering)
First Semester
ECE-1105: Information Theory and Coding
(For UIET)

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part.

x-x-x

1.	i. What is conditional entropy? ii. Define Gaussian noise. iii. What is power spectral density? iv. What is a generator polynomial? v. What type of key is used in symmetric cryptography? vi. What does BSC stand for?	2x5
PART A		
2.	i. What is entropy? Discuss the role of entropy in communication. ii. Differentiate between sources with memory and sources without memory.	5, 5
3.	i. Explain prefix codes and variable-length codes with examples. ii. What is a binary symmetric channel (BSC)? Derive its capacity formula.	5, 5
4.	i. Discuss channel types, properties, noise effects and channel capacity in detail. ii. Describe the Hartley and Shannon laws for channel capacity.	5, 5
PART B		
5.	i. Define differential entropy and state its significance in continuous information theory. ii. Explain Shannon's limit for noisy channels.	5, 5
6.	i. Write short notes on: (a) Linear block codes, (b) Cyclic codes. ii. Describe the role of the Viterbi decoding algorithm.	6, 4
7.	Briefly explain any two encryption algorithms: DES, IDEA, RSA	10

x-x-x