Exam.Code:0969
Sub. Code: 7047

2023

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. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

a) What is channel redundancy?

b) Define Signal-to-Noise ratio.

c) What is meant by systematic codes?

d) If the channel is band limited to 5 kHz & Signal to Noise Ratio is 15, what would be the capacity of channel?

e) The method of converting a word to a stream of bits is called ____ (Binary coding / Source coding / Bit coding / Cipher coding). (5x2)

UNIT - I

II. What is entropy? Describe different types of entropy. (10)

III. What do you mean by prefix, variable and fixed length codes? Describe. (10)

IV. a) Draw the block diagram of Binary Symmetric Channel (BSC) model and describe it.

b) A DMS has an alphabet of five letters X_1, X_2, X_3, X_4, X_5, each occurring with probability 1/5. Evaluate the efficiency of a fixed-length binary code in which each letter is encoded separately into a binary sequence. (2x5)

UNIT - II

V. Derive an expression for Shannon rate limit and efficiency for noisy continuous channels. (10)

P.T.O.

VI. a) Compare soft decision decoding with hard decision decoding.

b) Explain Convolution Codes with suitable example. (4,6)

VII. Describe the following:-

a) DES

b) RSA algorithm (2x5)

x-x-x