Assignment 2

Sub Code – ECE 311
Sub Name – Information Theory and Coding
Date of posting/announcing the assignment – 08/09/23
Deadline for submission of assignment – 15/10/23
Sub. Coordinator – Dr. Manish Kashyap

Problem (Design) Statement

An analog signal is to be transmitted over a noisy channel and received at the receiver. Design the following components in both GNU OCTAVE and LT SPICE-

1. Analog to Digital converter **(10 Marks for circuit, 10 for code)**
   - Choose the sampling rate, Quantization levels and encoding with suitable reasons
2. Source Encoder **(10 Marks for circuit, 10 for code)**
   -Select Encoding scheme as you may please
3. Channel Encoder **(10 Marks for circuit, 10 for code)**
   - Select (n,k) values suitably. [Symbols have usual meaning]
4. Channel **(10 Marks for circuit, 10 for code)**
   - Select noise distribution as Gaussian only
5. Channel Decoder **(10 Marks for circuit, 10 for code)**
6. Source Decoder **(10 Marks for circuit, 10 for code)**
7. Digital to Analog converter **(10 Marks for circuit, 10 for code)**

Properly document your assignment in a word file by putting the circuit diagram with labels wherever required and comments for the GNU octave code. Hardcopy of the assignment is to be submitted. For soft copies of code and circuit, a separate google form will be circulated.

The hardcopy submission should contain proper explanation of the working of circuit/code with a numerical example.