Assignment 1:

Explain each block and other details of the simplified communications model in Figure 1.3.

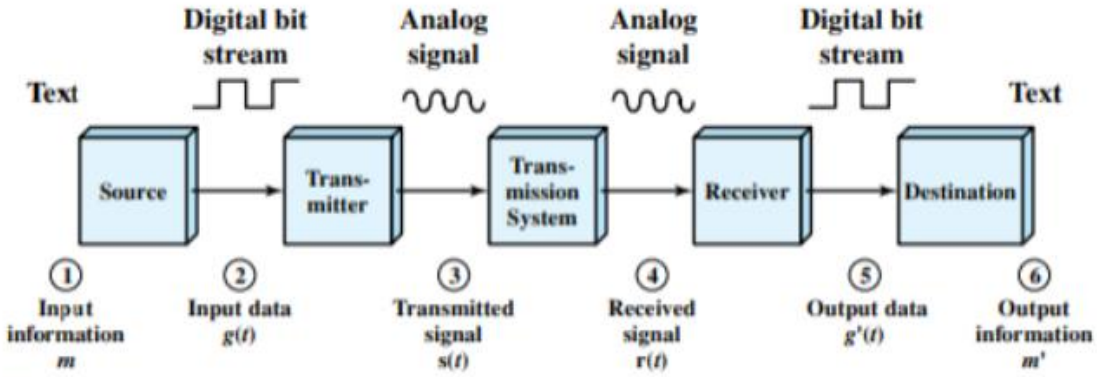

Figure 1.3 Simplified Data Communications Model

The communication system consists of five main components: the source, transmitter, transmission system, receiver, and destination. The source is where the original information originates, such as text from a computer or voice from a phone, and it generates the input message or information . This information is converted into input data by the transmitter, which prepares the information for transmission by converting it into a suitable signal, such as digital bits into an analog waveform. The transmission system serves as the pathway for the signal, which could be a wired connection like cables or fiber optics, or a wireless medium such as radio waves. During its journey, the transmitted signal s(t) may be affected by noise or distortion, resulting in a received signal r(t) that may not perfectly match the original. The receiver processes the received signal, converting it back into output data g(t) that the destination can interpret. Ideally, this output should closely resemble the original input data, ensuring the communication is accurate and reliable. Error detection and correction mechanisms are often applied to minimize the impact of transmission errors. Finally, the destination is the end device, such as a computer, phone, or server, that receives and interprets the message. This process ensures smooth and reliable data exchange by systematically converting, transmitting, and reconstructing the signal from sender to receiver.