Assignment - 02

1. *What is the Nyquist capacity for a signal with a frequency bandwidth of 1kHz, using Binary Phase Shift Keying (BPSK) modulation?*
2. *What is the Shannon-Hartley theoretical capacity for a signal with a frequency bandwidth of 1kHz, and a SNR = 200?*
3. *Find the Capacity of the ordinary voice grade telephone line whose bandwidth is 31000Hz. And SNR=30dB.*
4. *If the bandwidth of a noisy channel is 4 KHz, and the signal to noise ratio is 100, then the maximum bit rate will be what??*
5. *Television channels are 12 MHz wide. How many bits/sec can be sent if 8–level digital signals are used? Assume a noiseless channel.*
6. *What is signal-to-noise ratio in order to put a T1 carrier on a 150-KHz line? The data rate of T1 is 1.544 Mbps.*
7. *Calculate the maximum bit rate for a channel having bandwidth 5400Hz and SNR 20dB*
8. Given a bandwidth of a telephone transmission facility 3 KHz, and a normal SNR of 56dB. Calculate maximum channel capacity of the telephone line.
9. Given an intended capacity of 20 Mbps, the bandwidth of the channel is 3 MHz. What is the signal to noise ratio required to achieve this capacity?
10. Assume we wish to transmit a 56 kbps data stream using a spread spectrum. Find the channel bandwidth required when SNR = 0.1, 0.01 and 0.001.