**Madan Mohan Malaviya University of Technology Gorakhpur**

**SUBJECT: Digital Communication (BEC-301) ECE-VTH SEM**

**ASSIGNMENT -I**

**Q.1** Enumerate the essentials of Digital communication. Draw the block diagram and explain function of each block.

**Q.2** Write the advantages and disadvantages of a digital communication system.

**Q.3** With neat diagram explain the basic elements of a pulse code modulation (PCM). A sinusoidal signal is transmitted using PCM scheme. The target output SNR should be greater than 13dB.Find the no of minimum no of representation level(M) and the minimum no of bits required to represent each sample to achieve the above performance.

**Q.4** Why precoding operation is performed in duobinary signalling? Perform the duobinary coding and decoding in tabular form for a sequence 0010110 with reference bit as 1.

**Q.5** What do you understand by Inter-Symbol Interference (ISI). Derive the Nyquist Criteria for zero ISI?

**Q.6** Explain the working Principle of transmitter and receiver of delta modulation.

**Q.7** Explain the working principle of transmitter and receiver of adaptive delta modulation.

**Q.8** A delta modulation system is designed to operate at sampling frequency of 6KHz and step size of 350mV. Determine the maximum amplitude of a 1KHz input sinusoidal signal for which the DM does not show the overload slope.

**Q.9** What are the different types of noise in DM system? Explain.

**Q.10** What is the raised-cosine filter? In a baseband communication link, frequencies up to 3500Hz are used for signalling. Cosine pulse with 75% excess bandwidth and for no-inter symbol interference, find out the maximum signalling rate in symbols per second.

**Q.11** Explain in detail about Baseband Binary transmission Inter symbol interference and its effects?

**Q.12** Explain Delta modulation in detail with a suitable diagram. Also, compare its performance with Adaptive Delta modulation.

**Q.13** A message signal of m(t)=10t is transmitted by using delta modulation having pulse rate 1000 pulse per second. Find ?

**Q.14** A linear DM is designed to operate on speech signal which is limited to 3.2 KHz. The DM uses following specification sampling rate is 10 times Nyquist rate and step size 100mV.The modulator is tested with a 1KHz sinusoidal signal. Determine the maximum amplitude of the test signal required to avoid the slope overload distortion.