Indian Institute of Information Technology Allahabad
Department of Electronics and Communication Engineering

Course Name: **Digital Communication**

EXPERIMENT NO: 1

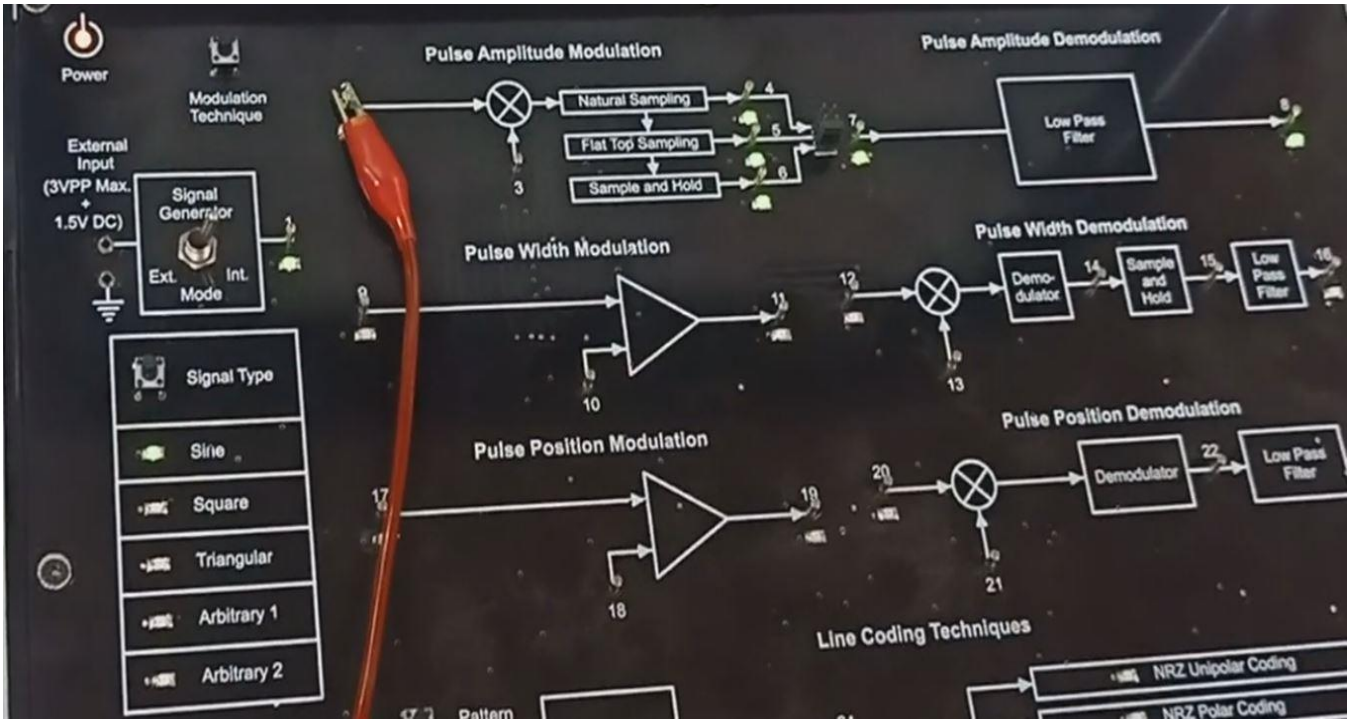
Objective/Aim – Study and analysis of Natural/Flat-top/ Sample-hold sampling methods for pulse amplitude modulation (PAM).

Setup requirement -

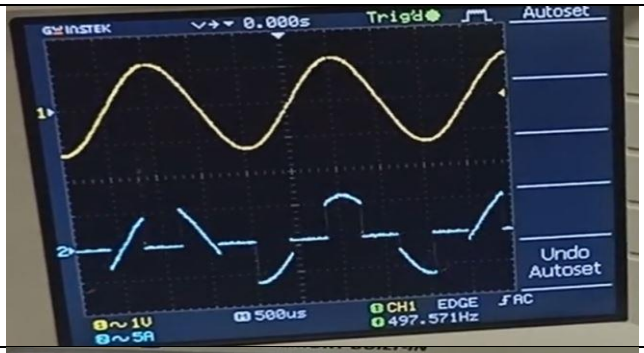
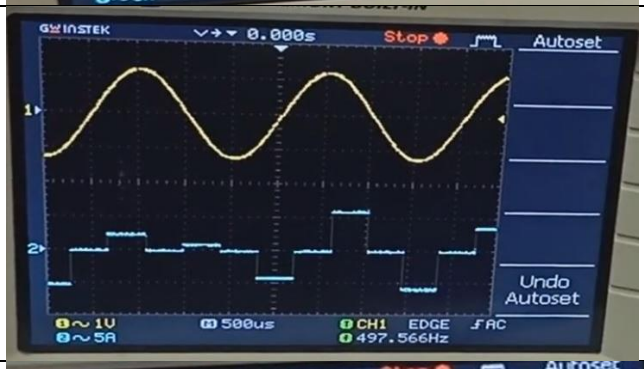
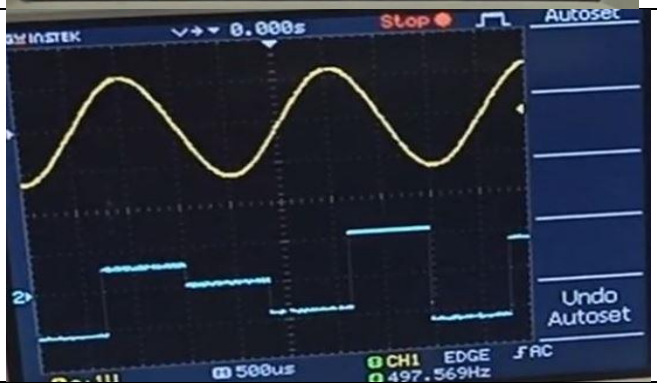
- TechBook Scientech 2801
- Power Supply
- DSO
- Test Probe

Theory - Pulse amplitude modulation is the basic form of pulse modulation. This modulation technique includes three types of sampling methods i.e., Natural, Flat-top, and Sample-hold sampling. In this modulation, the signal is sampled at regular intervals and amplitude of each sample is made proportional to the amplitude of the modulating signal.

Block Diagram/ Circuit Diagram -



Observation tables -

Input Signal Frequency	Input Signal Type	Sampling Type	Output
500 Hz	Sine	Natural Sampling	
500 Hz	Sine	Flat top Sampling	
500 Hz	Sine	Sample and hold	

Results - In this exercise, we observe that the PAM signals consist of samples of the message signal. Moreover, we have observed the differences between natural, flat-top, and sample & hold sampling using different sampling rates and pulse-widths.

Precautions- Connections should be verified before clicking the run button.