Amplitude Shift Keying (ASK Modulator)

Aim : To study and implement ASK modulator and to observe the waveform .

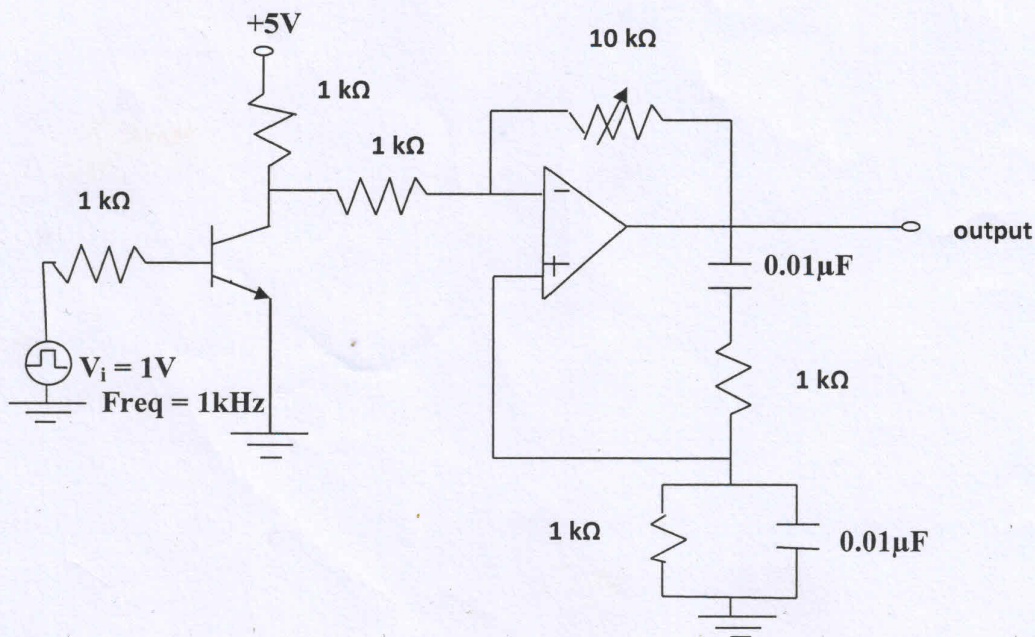**Equipment Required :**

Equipment	Range	Quantity
DSO	(0-500)MHz	1
Function Generator	(0-10)MHz	1
Power Supply	(0-30)V	1
	+12V	1

Components Required :

Component	Value	Quantity
Op-amp	741	1
Transistor	BC107	1
Resistor	1 kΩ	5
	10 kΩ (pot)	1
Capacitor	0.01µF	2

Circuit Diagram :

THEORY:

To represent a digital data, finite number of distinct signals is used. ASK uses a finite number of amplitudes, each assigned a unique pattern of binary digit. Each amplitude signal encodes an equal number of bits. Each pattern of bits forms the symbol that is represented by the particular amplitude.

In digital communications ASK is a modulation process, which imparts to a sinusoid two or more discrete amplitude levels. These are related to the number of levels adopted by the digital message.
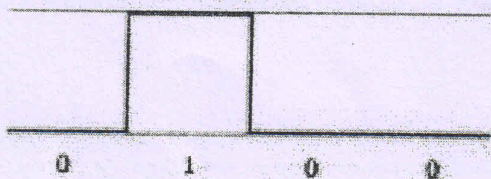
PROCEDURE:

1. Connections are made as per the circuit diagram.
2. Set input signal (square wave) say 1V, 1 kHz using a function generator and carrier signal (sine wave) say 1V, 10 kHz using another generator.
3. Observe the output waveform on the CRO.
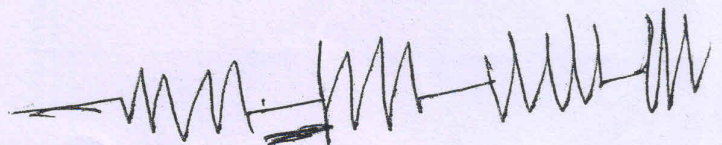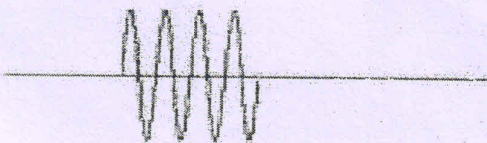4. Plot the observed waveform on the CRO.

WAVEFORM:

Carrier
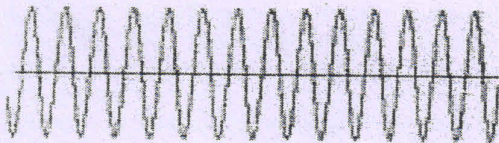
Modulating Wave (digital)

0   1   0   0

Modulated Result

Amplitude Shift keying (ASK) Demodulator

Aim: To study and implement ASK demodulator and to observe the waveform .
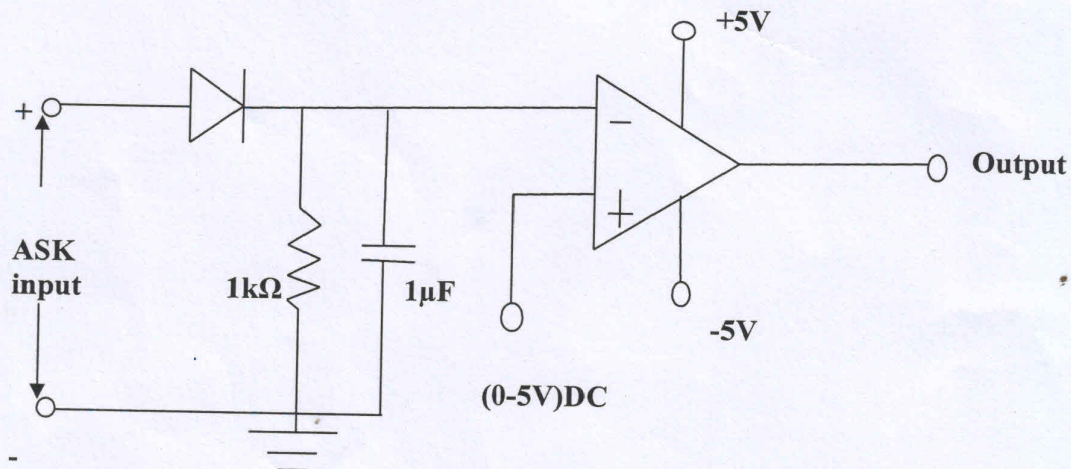
Equipment Required :

Equipment	Range	Quantity
DSO	(0-500)MHz	1
Function Generator	(0-10)MHz	1
Power Supply	(0-30)V	1
	+12V	1

Components Required :

Component	Value	Quantity
Op-amp	741	1
Diode		1
Resistor	1 kΩ	1
Capacitor	1μF	1

Circuit Diagram:

Theory :

The demodulator   which is designed specifically for the symbol-set used by the modulator, determines the amplitude of the received signal and maps it back to the symbol it represents, thus recovering the original data.

Procedure :

1. Connections are made as per the circuit diagram.
2. Give the ASK modulated signal as input the circuit.
3. Observe the output waveform on the DSO.
4. Vary the V_{ref} (0-5V) and observe the corresponding waveform on the DSO.