EXPERIMENT # 4
Binary Amplitude Shift keying BASK

INTRODUCTION

Amplitude-shift keying (**ASK**) is a form of amplitude modulation that represents digital data as variations in the amplitude of a carrier wave. In an ASK system, the binary symbol 1 is represented by transmitting a fixed-amplitude carrier wave and fixed frequency for a bit duration of T seconds. If the signal value is 1 then the carrier signal will be transmitted; otherwise, a signal value of 0 will be transmitted. It is also called ON-OFF keying OOK.
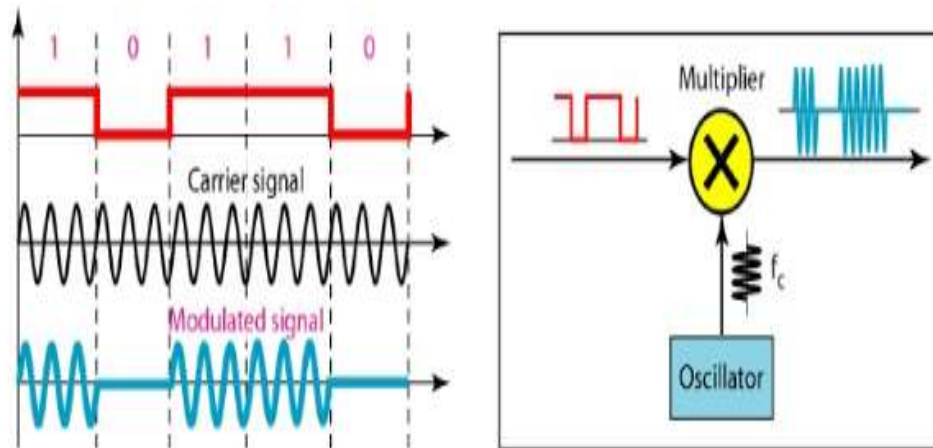

Figure 1: Implementation of Binary ASK.

Laboratory Procedure

- Connect the circuit shown in Fig.2.
- Apply a sinusoidal carrier of frequency (10kHz) and peak-to peak amplitude (10v) to the input as a carrier signal, and a square wave of (1 kHz) and peak-to peak amplitude (15v) to the transistor base as a baseband signal.
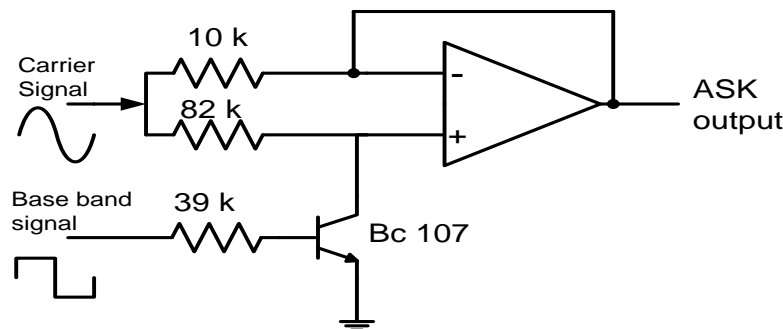- Observe and sketch the waveforms of the base band, carrier and ASK signal.

Figure 2: ASK circuit

Report:
1. Discuss the results.
2. What is the advantage and disadvantage of using ASK?
3. Plot the spectrum of ASK signal
4. Plot a block diagram to demodulate the ASK signal.

EXPERIMENT # 5
Binary Phase Shift keying BPSK

INTRODUCTION

PSK is the digital modulation technique in which the phase of the carrier signal is changed by varying the sine and cosine inputs at a particular time. The block diagram of Binary Phase Shift Keying consists of the balance modulator which has the carrier sine wave as one input and the binary sequence as the other input. Following is the diagrammatic representation.
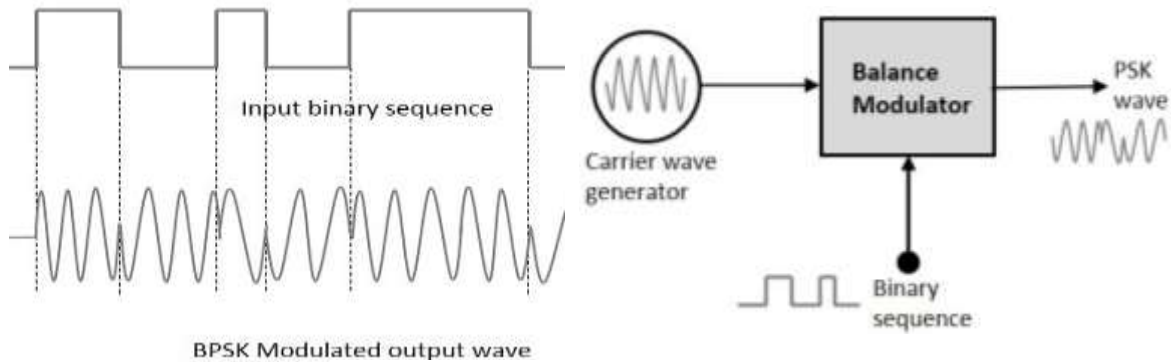

Figure 1. Implementation of PSK.

The modulation of BPSK is done using a balance modulator, which multiplies the two signals applied at the input. For a zero binary input, the phase will be **0°** and for a high input, the phase reversal is of **180°**. Following is the diagrammatic representation of BPSK Modulated output wave along with its given input.

Laboratory Procedure

- Connect the circuit shown in Fig.2.
- Apply a sinusoidal carrier of frequency (10 kHz) and peak-to peak amplitude(10v) to the input, and a square wave of (1kHz) and peak-to peak amplitude (15V) v to the transistor base.
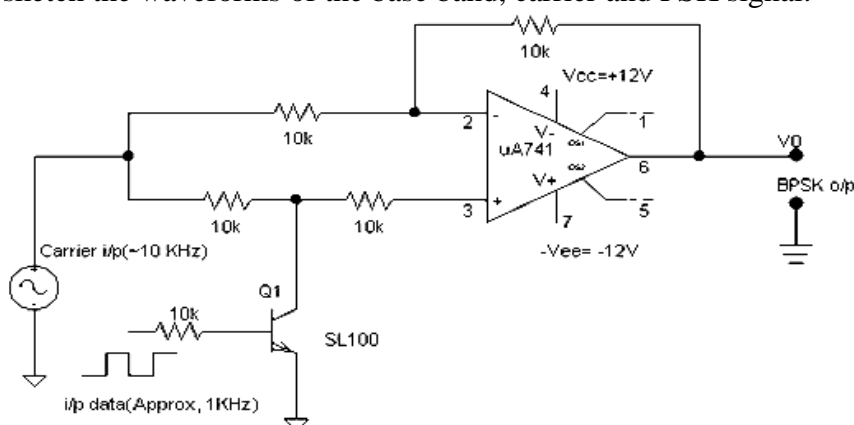- Observe and sketch the waveforms of the base band, carrier and PSK signal.

Figure 2. PSK modulator

Report:

- Discuss the results.
- What is the advantage and disadvantage of PSK compared to ASK?
- Plot a block diagram of PSK demodulator.
- Plot the spectrum of PSK signal.