

# EXPERIMENT 7b

**AIM:** To study Frequency Shift Keying (FSK) Modulation.

**APPARATUS:** MATLAB Simulink.

**BLOCK DIAGRAM:**

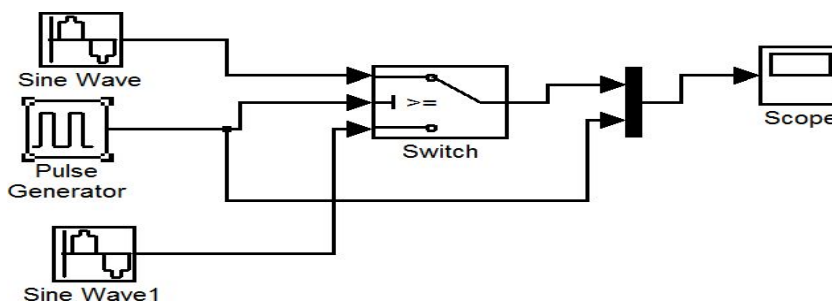


Fig.1: Block Diagram of FSK Modulator in Simulink MATLAB

**THEORY:**

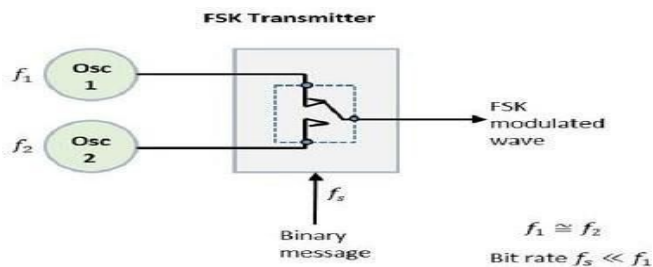


Fig.2: Basic principle of FSK modulator block

Frequency-shift keying (FSK) is a frequency modulation scheme in which digital information is transmitted through discrete frequency changes of a carrier wave. The simplest FSK is binary FSK (BFSK). BFSK uses a pair of discrete frequencies to transmit binary (0s and 1s) information. With this scheme, the "1" is called the mark frequency and the "0" is called the space frequency. If the incoming bit is 1, a signal with frequency  $f_1$  is sent for the duration of the bit. If the bit is 0, a signal with frequency  $f_2$  is sent for the duration of this bit. This is the basic principle behind FSK modulation.

## WAVE FORM

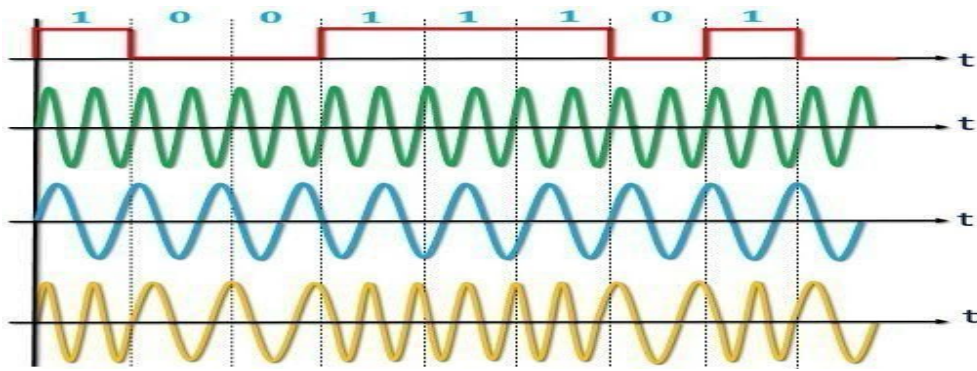


Fig.3: Waveform of FSK Modulator

First waveform is Digital bit stream according to it switching process will be proceed. Second and third waveforms are HIGH frequency carrier wave & LOW frequency carrier waveform respectively. Fourth is FSK modulation wave , here when input bit stream is 1 then get HIGH frequency and 0 then LOW frequency.

## PROCEDURE:

### Modulation:

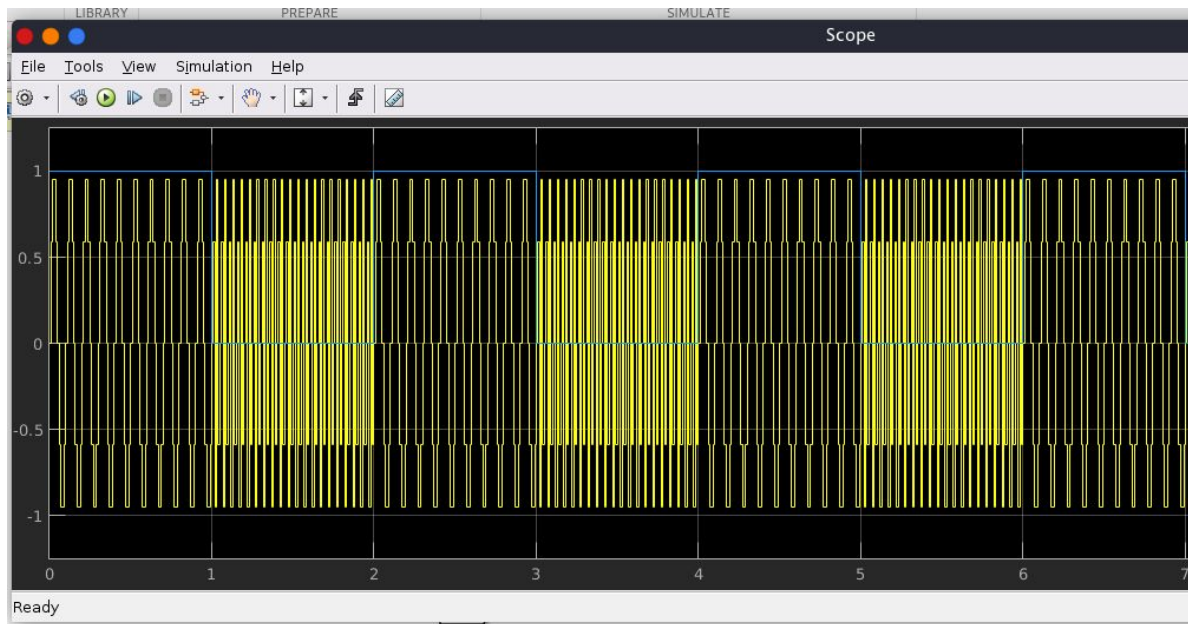
1. Connect all the blocks in Simulink according to given steps.(Which is given in FSK\_designingStep document).
2. After designing entire diagram click on RUN.
3. Observe the waveforms at output of modulator using virtual scope.

## OBSERVATION TABLE:

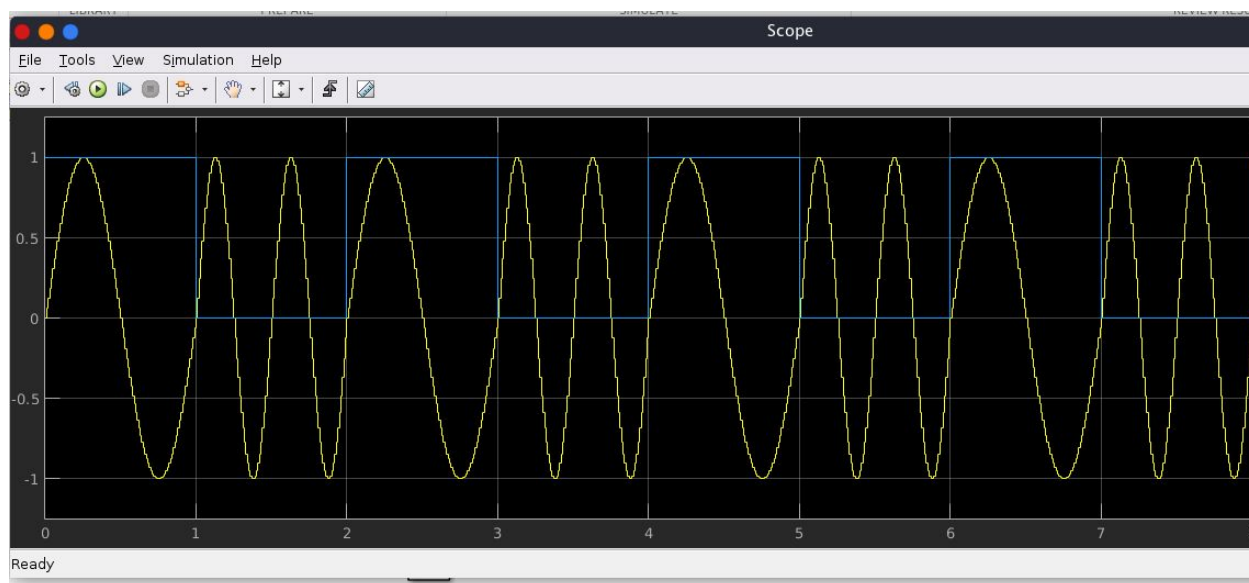
To observe waveform in Simulink by selecting different frequencies as per given Table.

Lower Frequency	Higher Frequency
10Hz	40Hz
1Hz	2Hz
2Hz	5Hz

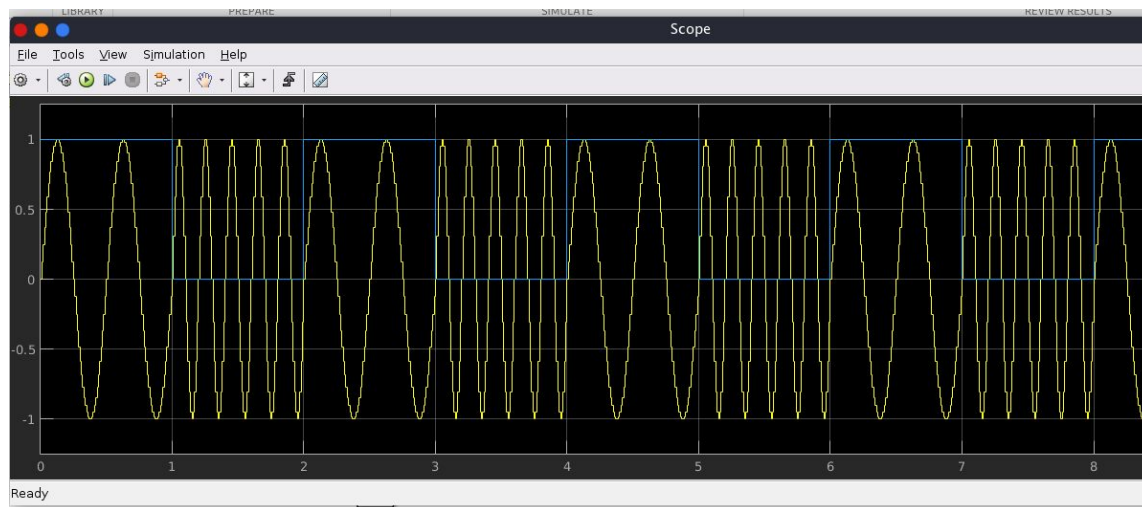
## RESULT:



*Simulink Waveform of FSK Modulator for 10Hz Low & 40Hz High frequencies*



*Simulink Waveform of FSK Modulator for 1Hz Low & 2Hz High frequencies*



*Simulink Waveform of FSK Modulator for 2Hz Low & 5Hz High frequencies*

### **CONCLUSION:**

In this experiment we performed FSK modulation using MATLAB simulink for various frequency pairs.

**Remarks:**

**Signature:**