EXPERIMENT No.-10

ASK modulation and demodulation

AIM OF THE EXPERIMENT: To study the generation and detection of Amplitude Shift Keying (ASK).

EQUIPMENTS/ APPARATUS REQUIRED :

| Sl.No.	Name of the Equipment/ Component	Specifications/ Range	Quantity
1.	ASK modulation and demodulation trainer kit		1
2.	Digital storage oscilloscope	100MHz,1GSa/S	1
3.	Power supply		1
4.	Probes		As per req.
5.	Patch cord		As per req.
6.	Connecting wires		As per req.

THEORY:

The binary ASK system was one of the earliest form of digital modulation used in wireless telegraphy. In a binary ASK system binary symbol 1 is represented by transmitting a sinusoidal carrier wave of fixed amplitude Ac and fixed frequency fc for the bit duration Tb whereas binary symbol 0 is represented by switching of the carrier for Tb seconds. This signal can be generated simply by turning the carrier of a sinusoidal oscillator ON and OFF for the prescribed periods indicated by the modulating pulse train. For this reason the scheme is also known as on-off shift testing.

PROCEDURE:

1. The connections are given as per the block diagram.

2. Connect the power supply in proper polarity to the kit and & switch it on.

3. Set the amplitude and frequency of the carrier wave as desired.

4. Set the message data bit.

5. Observe the waveforms at the

   a. Message data

   b. Carrier signal

   c. ASK modulator output

   d. ASK demodulator output

6. Plot it on graph paper.

7. BLOCK DIAGRAM/ CIRCUIT DIAGRAM:
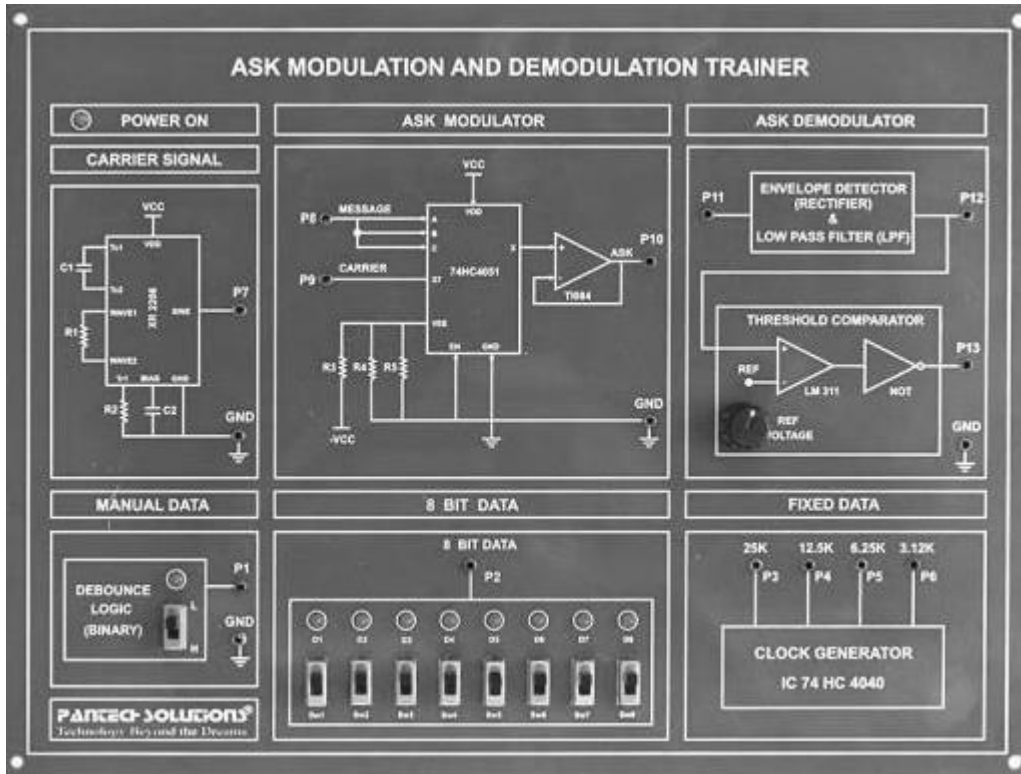
GRAPH:
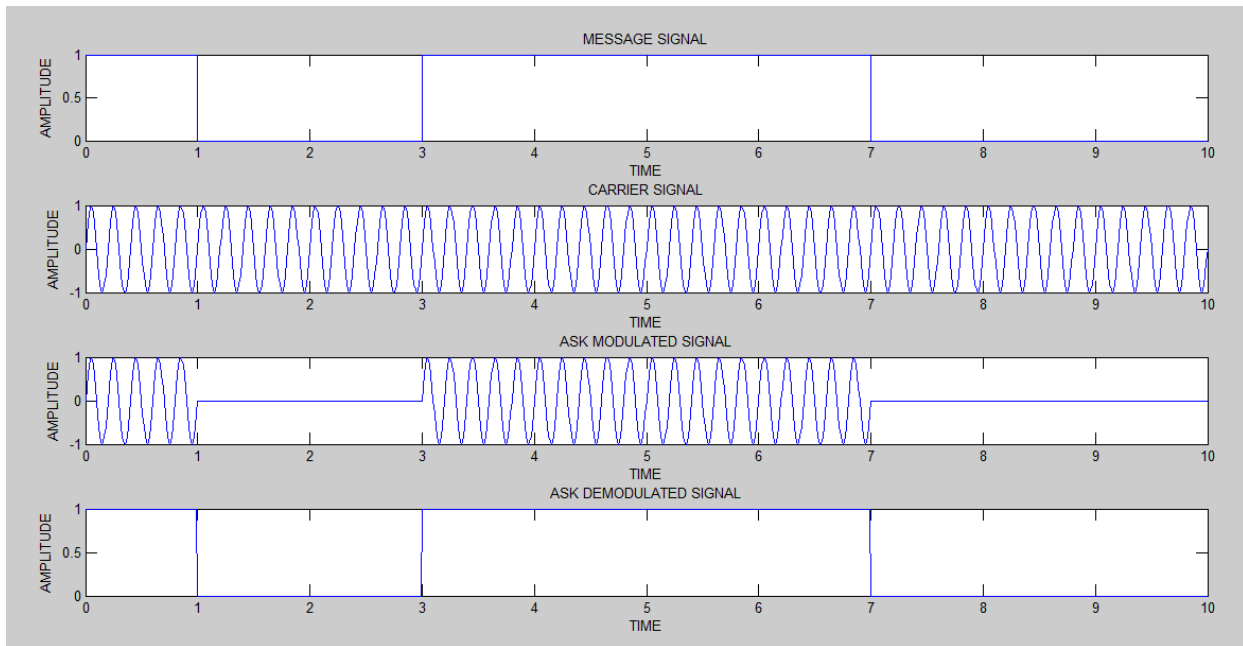
OBSERVATION:

SIGNAL	AMPLITUDE(v)	TIME PERIOD	FREQUENCY
Message signal			
Carrier Signal			
ASK modulated signal			
Demodulated output			

RESULTS: BASK Modulation and Demodulation are verified in the hardware kit and its waveforms are studied.

CONCLUSION:

From the above experiment, the amplitude of demodulated signal is obtained as………

PRECAUTIONS:

1. Do not use open ended wires to connect 230V, 50Hz power supply.
2. Check the connection before giving the power supply.
3. Observations should be done carefully.
4. Disconnect the circuit after switched off the power supply.

Phase Shift Keying (PSK) modulation and demodulation.

AIM OF THE EXPERIMENT: To study the generation and detection of Phase Shift Keying (PSK).

EQUIPMENTS/ APPARATUS REQUIRED :

| Sl.No.	Name of the Equipment/ Component	Specifications/ Range	Quantity
1.	PSK modulation and demodulation trainer kit		1
2.	Digital storage oscilloscope	100MHz,1GSa/S	1
3.	Power supply		1
4.	Probes		As per req.
5.	Patch cord		As per req.
6.	Connecting wires		As per req.

THEORY:

Phase shift keying is a modulation/data transmitting technique in which phase of the carrier signal is shifted between two distinct levels. In a simple PSK (i.e. binary PSK) un-shifted carrier $V\cos\omega t$ is transmitted to indicate a 1 condition, and the carrier shifted by 180° i.e. $-V\cos\omega t$ is transmitted toindicate as 0 condition.
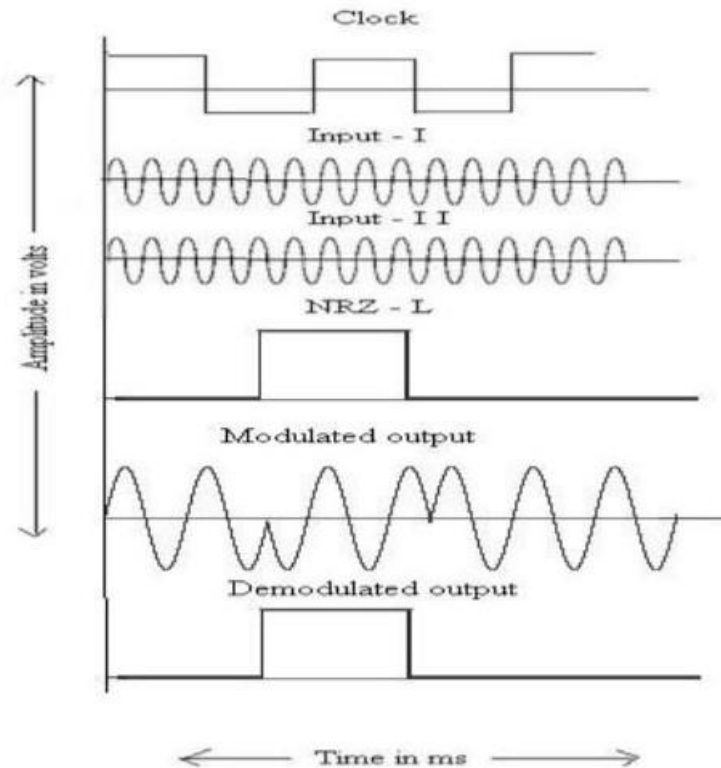
PROCEDURE:

1. The connections are given as per the block diagram.
2. Connect the power supply in proper polarity to the kit and & switch it on.
3. Set the amplitude of the sine wave as desired.
4. Observe the waveforms at the
   a.   Clock
   b.   SIN 1 & SIN 2
      c.   MODULATOR OUTPUT
   d.   PSK OUT
5. Plot it on graph paper.
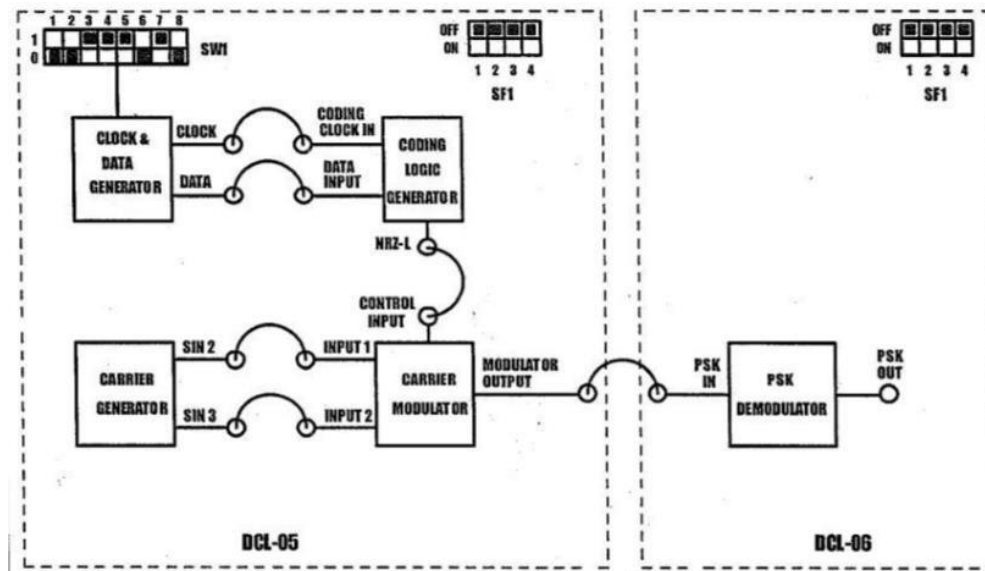
BLOCK DIAGRAM/ CIRCUIT DIAGRAM:

GRAPH:

OBSERVATION:

SIGNAL	AMPLITUDE(v)	TIME PERIOD	FREQUENCY
Clock Signal			
Input1			
Input2			
Modulator Output			
Demodulated output			

RESULTS: BPSK Modulation and Demodulation are verified in the hardware kit and its waveforms arestudied.

CONCLUSION:

From the above experiment, the amplitude of demodulated signal is obtained as………

PRECAUTIONS:

1. Do not use open ended wires to connect 230V, 50Hz power supply.
2. Check the connection before giving the power supply.
3. Observations should be done carefully.
4. Disconnect the circuit after switched off the power supply.

Frequency Shift Keying (FSK) modulation and demodulation.

AIM OF THE EXPERIMENT: To study the generation and detection of Frequency ShiftKeying (FSK).

EQUIPMENTS/ APPARATUS REQUIRED :

| Sl.No.	Name of the Equipment/ Component	Specifications/ Range	Quantity
1.	FSK modulation and demodulation trainer kit		1
2.	Digital storage oscilloscope	100MHz,1GSa/S	1
3.	Power supply		1
4.	Probes		As per req.
5.	Patch cord		As per req.
6.	Connecting wires		As per req.

THEORY:

FSK signaling schemes find a wide range of applications in low-speed digital data transmission system. FSK schemes are not as efficient as PSK in terms of power and bandwidth utilization. In binary FSK signaling the waveforms are used to convey binary digits 0 and 1 respectively. The binary FSK waveform is a continuous, phase constant envelope FM waveform. The FSK signal bandwidth in this case is of orderof 2MHz, which is same as the order of the bandwidth of PSK signal.
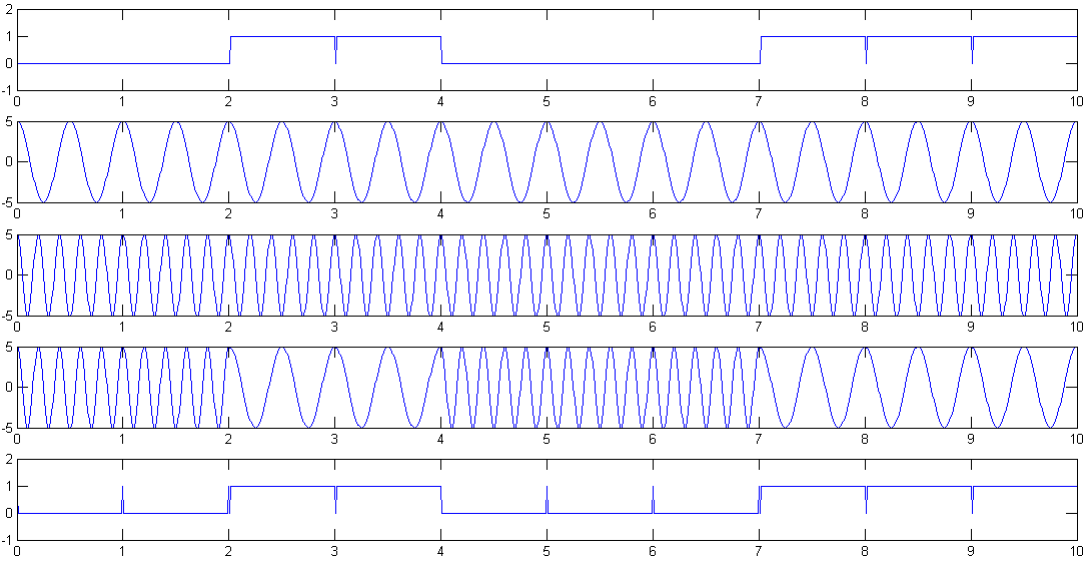
PROCEDURE:

1. The connections are given as per the block diagram.
2. Connect the power supply in proper polarity to the kit and & switch it on.
3. Set the amplitude of the sine wave as desired.
4. Observe the waveforms at the

    i.   Clock

    j.   SIN 1 & SIN 2

    k.   MODULATOR OUTPUT

    l.   PSK OUT
5. Plot it on graph paper
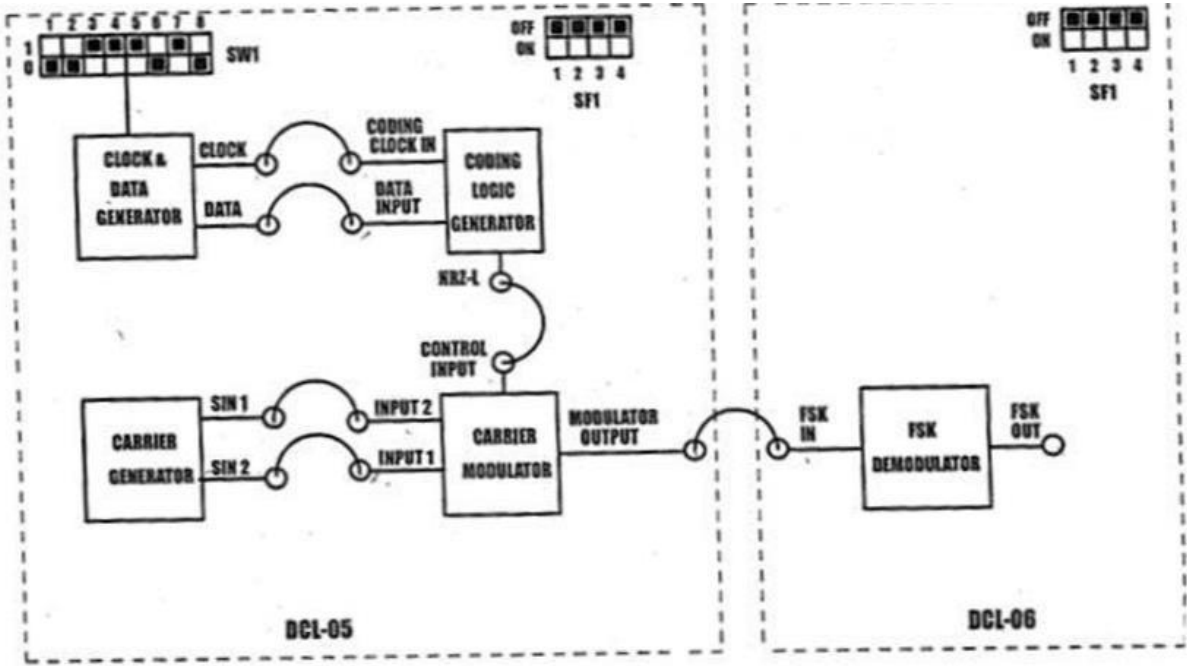
BLOCK DIAGRAM/ CIRCUIT DIAGRAM:

GRAPH:

OBSERVATION:

SIGNAL	AMPLITUDE(v)	TIME PERIOD	FREQUENCY
Clock Signal			
Input1			
Input2			
Modulator Output			
Demodulated output			

RESULTS: BFSK Modulation and Demodulation are verified in the hardware kit and its waveforms are studied.

CONCLUSION:

From the above experiment, the amplitude of demodulated signal is obtained as………

PRECAUTIONS:

1. Do not use open ended wires to connect 230V, 50Hz power supply.
2. Check the connection before giving the power supply.
3. Observations should be done carefully.
4. Disconnect the circuit after switched off the power supply.