

### Experiment No: 05

Name of the Experiment: Design, Implementation and performance testing of an PSK Digital Modulation Circuit Using IC CD4016.

#### Objectives:

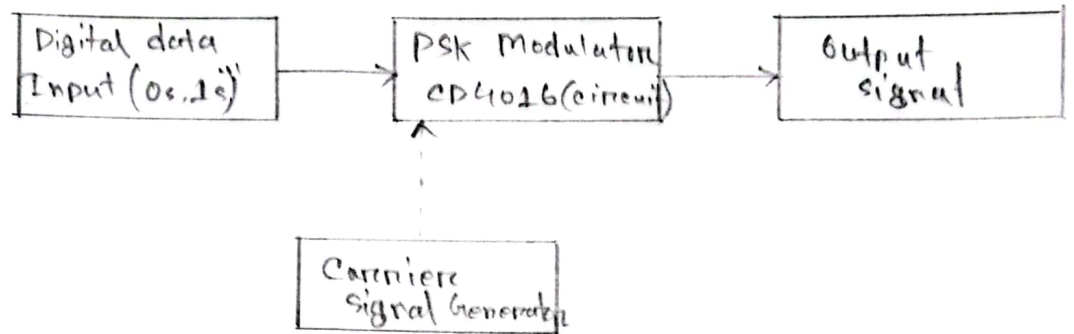
- To design and implement a Binary Phase shift keying (BPSK) modulation circuit using the CD4016 quad bilateral switch IC.
- To analyze the circuit performance using an oscilloscope and measure key parameters like phase shift accuracy and signal integrity.

Theory: Phase Shift keying (PSK) is a digital modulation technique where the phase of the carrier signal is based on digital data (0s and 1s). A communication type is Binary shift keying (BPSK) where:

- A '0' bit represents a  $0^\circ$  phase shift.
- A '1' bit represents a  $180^\circ$  phase shift.

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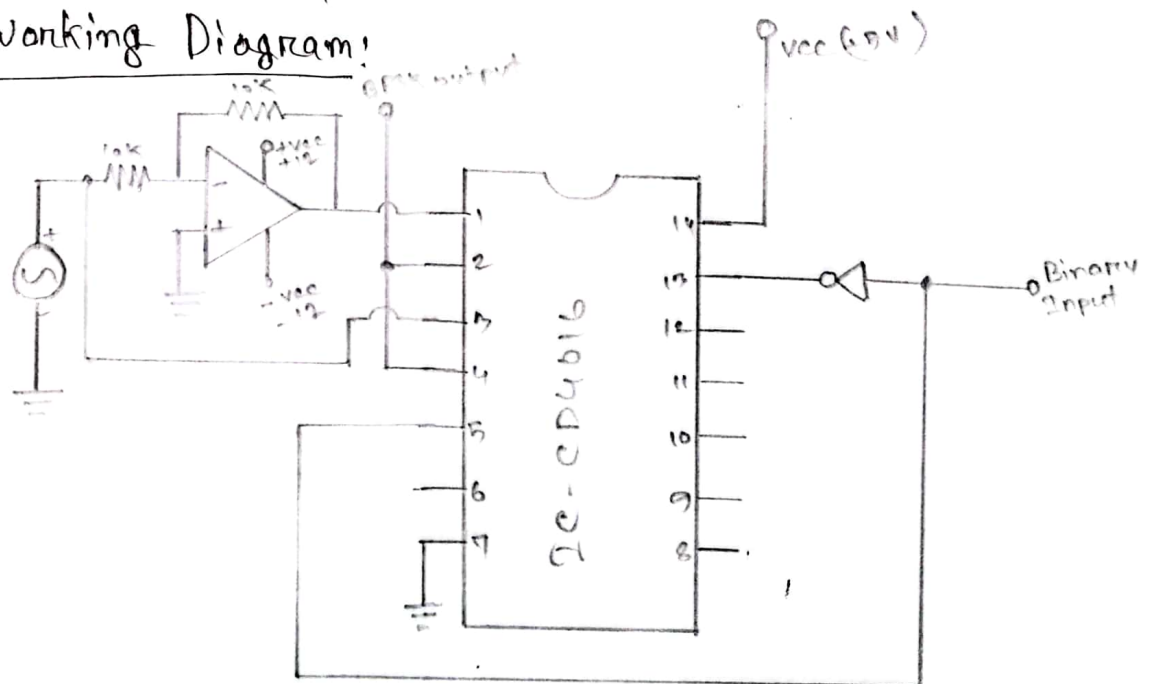
### Block Diagram:



### Apparatus:

- (1) IC CD4016
- (2) Function Generator
- (3) Oscilloscope
- (4) Bread Board
- (5) Power supply

### Working Diagram:



Procedure:

- (1) Assemble the circuit on a breadboard.
- (2) Generate a carrier signal.
- (3) Apply Digital input data from a function generator.
- (4) Connect the CD4016 IC,
- (5) Observe the output waveform on an oscilloscope.
- (6) Compare theoretical and experimental result.

Precautions:

- Ensure correct wiring of the CD4016 to avoid short circuit.
- Use proper voltage levels.
- Avoid noise interference in signal lines
- Check IC orientation before powering the circuit
- Use stable power sources.

Result: The PSK modulated signal was successfully generated.