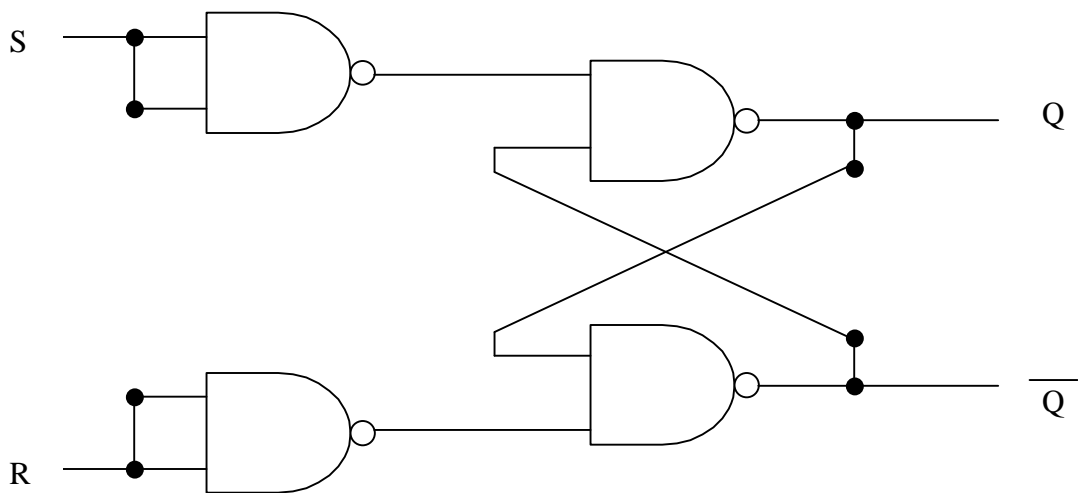


## Experiment 1k

### Flip-flop circuit using NAND gates

#### PROCEDURE

1. Copy the following schematic for the flip-flop circuit into your logbook



2. On your diagram add the corresponding circuit details, i.e. switches, pin numbers and LEDs.

3. Copy the following table into your logbook

R	S	Q	$\bar{Q}$
0	1		
0	0		
1	0		
0	0		
1	1		

4. With the power off connect the circuit

5. Switch on and confirm the circuits behavior and record the resultant states of Q and  $\bar{Q}$

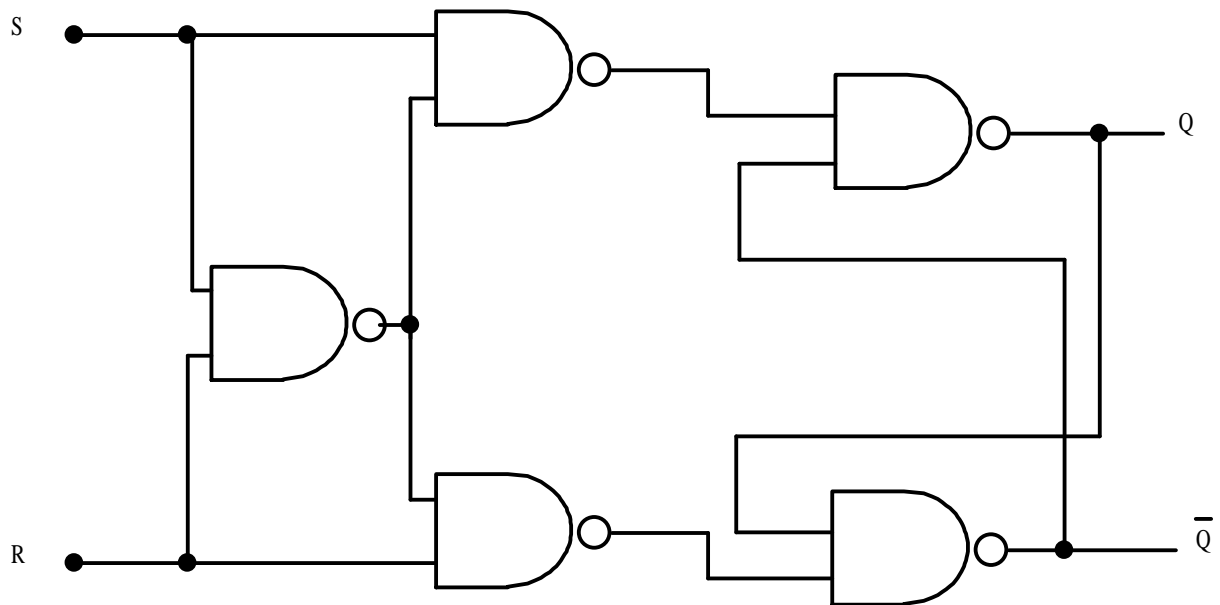
## Experiment 11

### Gated Flip-flop circuit

One problem in the SR latch circuit is when we both set the S(set) and R(reset) inputs to 1, one way round to avoid this problem is to add a control input via a NAND gate to the latch, i.e. we set the control to 0 if both S and R are set to 1, otherwise the control for all the other inputs will be set to 1.

### PROCEDURE

1. Copy the following schematic for the flip-flop circuit into your logbook



2. On your diagram add the corresponding circuit details, i.e. switches, pin numbers and LEDs.
3. With the power off connect the circuit
4. Switch on and tabulate the results for all the possible input combinations of S and R

Experiment 1m

To investigate the operation of the JK Flip-Flop

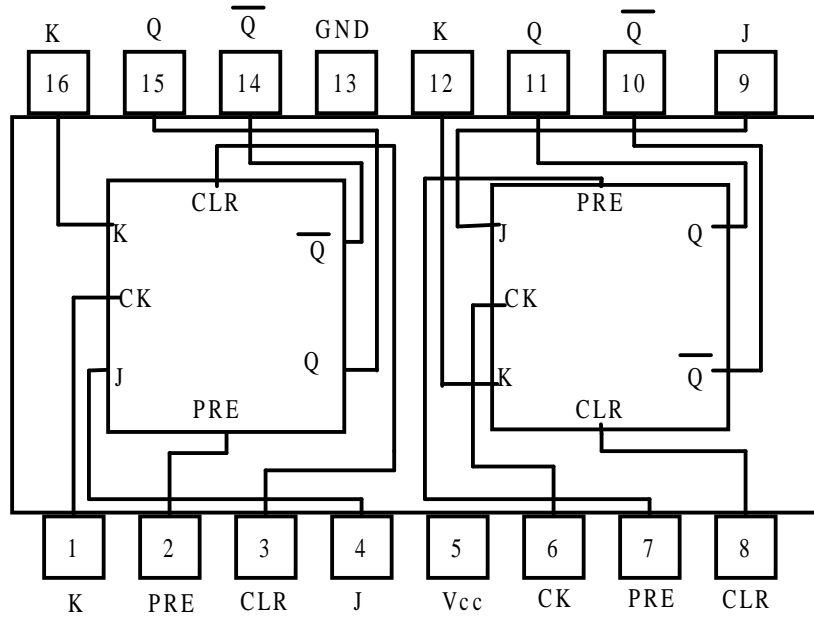


FIGURE 2  
7476

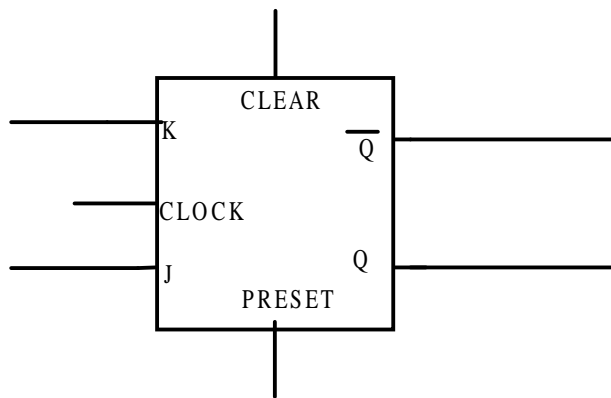


FIGURE 3

## PROCEDURE

1. Copy figure 3 into your logbook
2. On your diagram attach J,K,PRESET, and CLEAR to switches, the CLOCK input pin to the Pulse generator, and Q and  $\overline{Q}$  to LED's.
3. Label the pin numbers in your circuit
4. With the power off connect the circuit
5. Copy the following table into your logbook

PRESET	CLEAR	CLOCK	J	K	Q	$\overline{Q}$
0	1	OFF	0	0		
1	0	OFF	0	0		
0	0	OFF	0	0		
1	1	ON	0	0		
1	1	ON	1	0		
1	1	ON	0	1		
1	1	ON	1	1		
1	1	ON	0	1		

6. Switch the power on and fill out the results into your table

