MIT - WORLD PEACE UNIVERSITY

B.Sc. (Computer Science)

Subject :

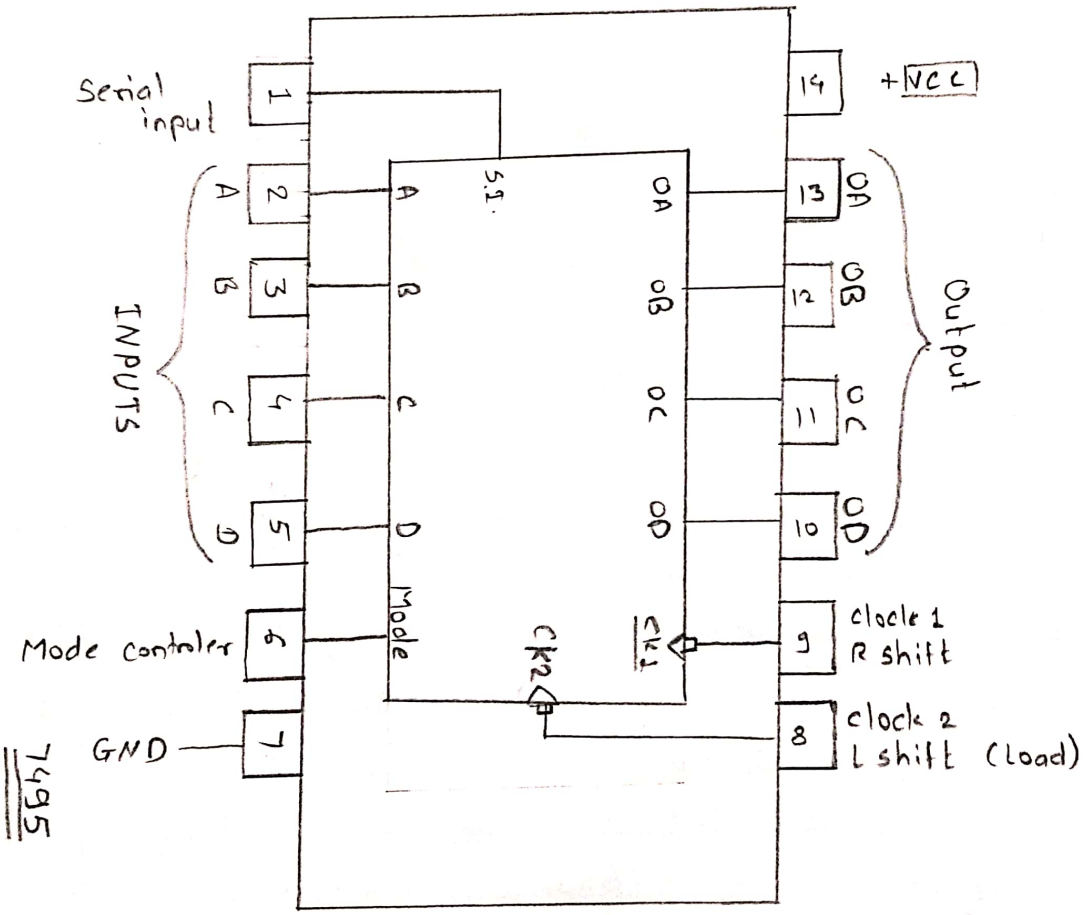
Exp. No.: 7

Class :

Batch :

Date :

Name : Vedant Adsare ..... Roll No.	Remarks :
Title : To study the operation of bi-operation of shift regester and to observe is output	Date :



Incomplete for
Diagram
Observation
Calculation / units
Graph Procedure
Precautions
Results
Late Submission

Aim:- To study the operation of bi-operation of shift regester and to observe is output.

Equipments:- Trainer kit and connecting wire.

Theory:- ▶ The IC 7495 shift register has 4-bit word capacity and has provision for serial and parallel output.

▶ It can be loaded by serial as well as parallel data inputs and has the capacity to provide the left shift and right shift function.

▶ The mode controls and two clock determine the function which the shift register will perform. (shift right or shift left)

When mode controls M = low : right shift operation

- With mode control M low, one input of all AND gates No.2 and enable All AND gate No 1
- Register does not accept parallel data but accept serial data and reaches to the input to 1st flip flop.
- Now output of each flip-flop is applied to Jk input of next flip flop through AND gates No.1 and NOT gate No.3 except FFA.
- This serial shift regestor arrangement, in which serial input is shifted to right after application of every clock pulse and regester works as right shift register.

When mode controls M = high: left shift operation

- One input of all AND gates No.1 is low, and one input of all AND gate No.2 is high This

disables all gate No. 2.
- Register does not accept serial data but accept parallel data. If data is connected to PD input, it reaches the J input of flip flop A (last f.f) and it externally QD is connected to Pc, Qc connected to PB and QB is connected to PA, then circuit arrangement works as left shift register.

Serial input ~~output~~ Parallel output (SIPO) and serial Input serial output (SISO)
- When M = low, data is applied at serial input.
- When clock pulses are applied then 4-bit data stored in flip-flop is available at the output of each flip-flop.
- So register work as serial input parallel output (SIPO). If again 4 clock pulse are applied and output is taken from last flip flop then data is available serially and shift register work as SISO shift register.

Parallel input parallel output (PIPO) and parallel input serial output (PISO)
- When M = high and it parallel 4-bit data is connected at PA to PD and clock pulse is applied, then 4 bit data is stored in 4-bit flip flop, is available at each output of flip flop. Hence it works as PISO shift register.
- When M is high and parallel data at P

to PD is applied.
- When clock pulse is applied, 4-bit parallel data gets stored in Flip-flop.
- If M is made low and 4 clock pulses are applied then serial data output at last D flip-flop.
- Shift register works as PISO shift register.

Test Procedure:-

PART (A): Serial in parallel out:
1. Connect the circuit as per circuit diagram.
2. Connect the +5V power supply between pin 14 to 7.
3. Apply series data at SD input i.e. pin 1 and ground to pin no. 6.
4. Apply clock pulse one by one at clock input i.e. pin no. 9.
5. Connect pin nos 10, 11, 12, 13 i.e. (QD, QC, QB, QA) to output LED's.
6. Observe the output of QA, QB, QC, QD on LED.
7. Write the output in the observation table.

PART (B):- Serial in serial out
1. Connect the circuit as per the diagram.
2. Connect the +5V power supply between pin 14 and pin 7.
3. Apply the series data at SD input i.e. pin 1 and ground to pin no. 6.
4. Apply clock pulse one by one at clock input i.e. pin no. 9.
5. Connect pins nos 10, 11, 12, 13 i.e. (QD, QC, QB, QA) to

output LED's.
6. For serial out consider only QA output.
7. Write the output in the observation table.

Part (c): Parallel in parallel out
1. Connect the circuit as per the circuit diagr
2. Connect the +5v power supply between pin 14 to pin 7.
3. Apply parallel data A,B,C,D at pin no. 2,3,4 and 5v to pin no.6.
4. Apply clock pulse one by one at clock input i.e. pin no. 8.
5. Connect pin no.s 10, 11, 12, 13 i.e. (QD, Qc, QB, Q
to output LED's
6. observe the output of Q_A, Q_B, Q_C, Q_D on LED
7. Write the output in the observation table.

Part D:- parallel in serial out
1. Connect the circuit as per circuit diagram.
2. Connect the +5v power supply between pin 14 t pin 7.
3. Apply series data at SD input i.e. pin 1 and 5v to pin no. 6.
4. Apply clock pulse one by one at clock inpu i.e. pin no. 8.
5. Connect pin no. 2 to pin no. 12, pin no. 3 t pin no. 11, pin no. 4 to pin no. 10
6. Connect pin no.s 10, 11, 12, 13. i.e. (QD Qc, QB
to output LED's.
7. Observe the output of Q_A, Q_B, Q_C, Q_D on LED
8. Write the output in the observation table.

DR. VISHWANATH KARAD
MIT - WORLD PEACE UNIVERSITY

Part (C) Serial in parallel out (left shift)

Input		Output			
S_D	Clock Pulse	Q_A	Q_B	Q_C	Q_D
1	0	x	x	x	1
0	1	x	x	1	0
1	2	x	1	0	1
1	3	1	0	1	1
	4	0	1	1	1

Result :- All truth tables are successfully verified practically and theoretically :-