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| **Course Name:** | **Digital Design Laboratory** | **Semester:** | **III** |
| **Date of Performance:** | **25 /10 /2023\_** | **Batch No:** | **C1** |
| **Faculty Name:** |  | **Roll No:** | **16010122257** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **\_\_\_/25** |

**Experiment No: 6**

**Title:Shift Register**

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| **Aim and Objective of the Experiment:** |
| To implement the SISO, SIPO, PISO, PIPO shift register using **Universal IC 74194** |

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| **COs to be achieved:** |
| **CO3**: Design synchronous and asynchronous sequential circuits. |

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| **Tools used:** |
| Trainer kits |

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| **Theory:** |
| A register is capable of shifting its binary information in one or both directions is known as shift register. The logical configuration of shift register consist of a D-Flip flop cascaded with output of one flip flop connected to input of next flip flop. All flip flops receive common clock pulses which causes the shift in the output of the flip flop.The simplest possible shift register is one that uses only flip flop. The output of a given flip flop is connected to the input of next flip flop of the register. Each clock pulse shifts the content of register one bit position to right.  The basic types of shift registers are   * Serial In - Serial Out * Serial In - Parallel Out * Parallel In - Serial Out * Parallel In - Parallel Out * Bidirectional shift registers.   **Pin diagram of IC 74194 and Function table**      **Circuit diagram: Serial left shift**      Truth Table   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **clk** | **A** | **B** | **C** | **D** | | Reset | 0 | 0 | 0 | 0 | | 1st falling  edge | 1 | 0 | 0 | 0 | | 2nd falling  edge | 1 | 1 | 0 | 0 | | 3rd falling edge | 1 | 1 | 1 | 0 | | 4th falling edge | 1 | 1 | 1 | 1 |   **Circuit diagram: Serial right shift Truth Table**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **clk** | **A** | **B** | **C** | **D** | | 0 | 0 | 0 | 0 | 0 | | 1 | 1 | 0 | 0 | 0 | | 2 | 0 | 1 | 0 | 0 | | 3 | 1 | 0 | 1 | 0 | | 4 | 1 | 1 | 0 | 1 |     **Circuit diagram:Parallel in Parallel out Truth Table** |

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| **Implementation Details** |
| **Procedure**   1. Locate IC 74196 on Digital trainer kit 2. Apply various inputs to appropriate pins as per the mode of operation with reference to the pin configuration of the IC. 3. Connect a pulsar switch to the clock input. 4. Verify the respective truth tables for different modes with reference to the truth table given in the data sheet of IC 74194. |
| **Post Lab Subjective/Objective type Questions:** |
| 1. What is a universal shift register?   IMG_20231025_112907276_HDR.jpg   1. Prepare a truth table for 3 bit SISO left shift with data(- - - ) along with clock pulse   IMG_20231025_121037439_HDR.jpg   1. Can a shift register be used as a counter? Give any one application.   IMG_20231025_134330476_HDR.jpg   1. How many clock pulses are required to enter a byte of data serially into an 8-bit shift register?   IMG_20231023_125559299_HDR.jpg |

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| **Conclusion:** |
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| **Signature of faculty in-charge with Date:** |