**CA INNOVATIVE ASSIGNMENT**

**REGISTER REFERENCE INSTRUCTION**

**FACULTY: KRUTI MA’AM**

**21BCE257 – RIDHDHI SANGANI**

**21BCE267 – AASHNA SHAH**

**21BCE272 – NIR SHAH**

**21BCE273 – SHRUTAM SHAH**

**16\*1 MUX FOR ACCUMULATOR**

|  |  |  |
| --- | --- | --- |
| SELECTION BITS | OPERATION | LOGIC USED |
| 0000 | CLA | Constant 0 is used |
| 0001 | CLE | Same output as input |
| 0010 | CMA | NOT gate used |
| 0011 | CME | Same output as input |
| 0100 | CIR | Shifter used |
| 0101 | CIL | Shifter used |
| 0110 | INC | Adder used with its second input as constant 1 |
| 0111 | SPA | Same output as input |
| 1000 | SNA | Same output as input |
| 1001 | SZA | Same output as input |
| 1010 | SZE | Same output as input |

**16\*1 MUX FOR ENABLE BIT**

|  |  |  |
| --- | --- | --- |
| SELECTION BITS | OPERATION | LOGIC USED |
| 0000 | CLA | Same output as input |
| 0001 | CLE | Constant 0 is used |
| 0010 | CMA | Same output as input |
| 0011 | CME | NOT gate used |
| 0100 | CIR | Same output as input |
| 0101 | CIL | Same output as input |
| 0110 | INC | Same output as input |
| 0111 | SPA | Same output as input |
| 1000 | SNA | Same output as input |
| 1001 | SZA | Same output as input |
| 1010 | SZE | Same output as input |

**16\*1 MUX FOR PROGRAM COUNTER**

|  |  |  |
| --- | --- | --- |
| SELECTION BITS | OPERATION | LOGIC USED |
| 0000 | CLA | Same output as input |
| 0001 | CLE | Same output as input |
| 0010 | CMA | Same output as input |
| 0011 | CME | Same output as input |
| 0100 | CIR | Same output as input |
| 0101 | CIL | Same output as input |
| 0110 | INC | Same output as input |
| 0111 | SPA | Comparator is used |
| 1000 | SNA | Comparator is used |
| 1001 | SZA | Comparator is used |
| 1010 | SZE | Comparator is used |

**16\*1 MUX FOR SEQUENCE COUNTER**

|  |  |  |
| --- | --- | --- |
| SELECTION BITS | OPERATION | LOGIC USED |
| 0000 | CLA | AND gate is used with its second input as 0 |
| 0001 | CLE | AND gate is used with its second input as 0 |
| 0010 | CMA | AND gate is used with its second input as 0 |
| 0011 | CME | AND gate is used with its second input as 0 |
| 0100 | CIR | AND gate is used with its second input as 0 |
| 0101 | CIL | AND gate is used with its second input as 0 |
| 0110 | INC | AND gate is used with its second input as 0 |
| 0111 | SPA | AND gate is used with its second input as 0 |
| 1000 | SNA | AND gate is used with its second input as 0 |
| 1001 | SZA | AND gate is used with its second input as 0 |
| 1010 | SZE | AND gate is used with its second input as 0 |