**EXECUTE SIGNALS: (6 bits)**

**Alu Selector: (4 bits)**

ALU\_SEL = OPCODE(3 downto 0);

**Out Selector: (1 bit)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 0 – ‘Z’ | Rest |
| 1 – Rdst | 01100 |

**ALU operand 2 Selector: (1 bit)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 0 – Rsrc2 | Rest |
| 1 – IMM | 00010  00101  00110 |

**MEMORY SIGNALS: (7bits)**

**Read/Write Select: (1 bit)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 0 – Read | 10001  10011  11011  11100 |
| 1 – Write | 10000  10100  11011 |

**Value Selector: (2 bit)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 00 – FLAGS&PC |  |
| 01 – PC | 11010 |
| 10 – [Rsrc] | 10000  10100 |

**Address Selector: (2 bits)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 00 – 1,0 |  |
| 01 – 3,2 |  |
| 10 – EA | 10011  10100 |
| 11 – SP/SP+2 | 10000  10001  11010  11011  11100 |

**(SP ALU) + (SP/SP+2) Selector: (1 bit)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 0 – ‘+’ + ‘SP+2’ | 10001  11011  11100 |
| 1 – ‘-‘ + ‘SP’ | 10000  11010 |

**SP load: (1 bit)**

|  |  |
| --- | --- |
| **LOAD** | **OPCODE** |
| 0 | Rest of them |
| 1 | 10001  11011  11100  10000  11010 |

**IO/MEM Selector: (1 bit)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 0 – MEM | Rest of them |
| 1 – IO | 01101 |

**WB SIGNALS: (4 bits)**

**Write Value Select: (3 bits)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 000 – ‘Z’ | 01000  01100  10000  10100 |
| 001 – IO/MEM | 10001  10011  01101 |
| 010 – ALUout | 01001  01010  01011  00111  00000  00001  00010  00011  00100  00101  00110 |
| 011 – IMM | 10010 |
| 100 – [Rdst] |  |
| 101 – [Rtmp] |  |

**Write Address Select: (1-bit)**

|  |  |
| --- | --- |
| **SEL** | **OPCODE** |
| 0 – Rdst | 00000  00001  00010  00010  00011  00100 |
| 1 – Rsrc1 | 00101  00110  01001  01010  01011  01101  10001  10010  10011 |