**Roll: 1703054**

**The Instruction Set Architecture (ISA):**

Types of instructions supported = 3

No. of ALU operations supported = 2

No. of registers in register set = 3

Word size of CPU = 5

Word size of RAM & ISA = 16

**Register Mode:**

| Opcode | | Register 1 | Register 2 | Unused |
| --- | --- | --- | --- | --- |
| Type (2 bits) | Operations (1 bit) | 2 bits | 2 bits | 9 bits |
| 00 | 0 (NOT) | 00-10 (R0-R2) | XX |
| 1 (ROR) | 00-10 (R0-R2) | 00-10 (R0-R2) |

**Register Mode NOT:** 00 0 00 00 000000000

**Register Mode ROR:** 00 1 00 01 000000000

**Immediate Mode:**

| Opcode | | Register 1 | Constant | Unused |
| --- | --- | --- | --- | --- |
| Type (2 bits) | Operations (1 bit) | 2 bits | 5 bits | 6 bits |
| 01 | 0 (NOT) | 00-10 (R0-R2) | XXXXX |
| 1 (ROR) | 00-10 (R0-R2) | 00000-00010 (R0-R2) |

**Immediate Mode NOT:** 01 0 00 00000 000000

**Immediate Mode ROR:** 01 1 00 00001 000000

**Branching Mode:**

| Opcode | | Address | Unused |
| --- | --- | --- | --- |
| Type (2 bits) | Operations (1 bit) | 3 bits | 10 bits |
| 10 | 0 (JZ) | 000-111 (0-7) |

**Branching JZ:** 10 0 000 0000000000