

## LAB # 9

Name: \_\_\_\_\_

Reg#: \_\_\_\_\_

### Aim:

Designing a custom ALU based processor

### Introduction:

#### Instruction Format:

An instruction format defines the layout of the bits of an instruction, in terms of its constituent parts. An instruction format must include an opcode and, implicitly or explicitly, zero or more operands.

Opcode	Operand(s)
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### Tasks:

#### • TASK 1:

Design a simple ALU based processor and implement it on Spartan 6 FPGA boards. Clock to be slowed 1 per sec and display the resultant answer on the 7-segment. Assume  $R_i$ ,  $R_k$  and  $R_j$  of 2 bits.

Further  $i, j, k \in \{0, 1, 2, 3\}$

sel_op	Sel_ $R_i$	Sel_ $R_j$	Sel_ $R_k$
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- $R_k = R_i + R_j$
- $R_k = R_i - R_j$
- $R_k = R_i \& R_j$
- $R_k = R_i | R_j$
- $R_i = \text{constant}$
- $R_i = -R_k$
- $R_i = R_i \wedge R_j$

