Each instruction can be encoded and stored in the *IR* register using the 9-bit format IIIXXXYYY

III Operation Function performed

**000 mv** *Rx*,*Ry Rx ←* [*Ry*]

**001 mvi** *Rx*,#*D Rx ← D*

**010 add** *Rx,Ry Rx ←* [*Rx*] + [*Ry*]

**011 sub** *Rx,Ry Rx ←* [*Rx*] *−* [*Ry*]

Instruction execution steps:

Fetch, Decode, Operands, Execute, Write back

T0 – Fetch

III Operation Function performed

**000 mv** *Rx*,*Ry Rx ← Ry*

**001 mvi** *Rx*,#*D Rx ← D*

**010 add** *Rx,Ry Rx ←* *Rx* + *Ry*

**011 sub** *Rx,Ry Rx ←* *Rx* *–* *Ry*

IIIX XXYY Y

Ex:

2000 ***001****0 0000 0*000 0000 MVI R0,

0005 0000 0000 0000 0101 #0005

0400 ***000****0 0100 0*000 0000 MOV R1, R0

4080 ***010****0 0000 1*000 0000 ADD R0, R1

6000 ***011****0 0000 0*000 0000 SUB R0, R0