P2)

SW	r3	r2	offset
101011	00011	00010	0000000000010100

instruction: SW r2, 20(r3)

In register 2 the store value in the memory address: (20 - 3) = 17

a) Sign-extend output: 0000 0000 0000 0000 0000 0000 0001 0100

Shift left 2 output: 0000 0000 0000 0000 0000 0000 0101 0000

b) Control unit input ALU: 010 (ADD)

c) New PC address: Old PC address + 4

d) RegDst = it can be 00010 or 00011

ALUSrc Mux output (sign-extend value) = 0000 0000 0000 0000 0000 0000 0001 0100

MemtoReg Mux output = it can be data memory output or ALU output

e) ALU input values = (-3 and 20)

First - ALU unit inputs are (old PC value and 4)

f) The inputs to registers Unit are:

Read Register 1 = 00011

Read Register 2 = 00010