

P4

a) opcode - 6 bits

rs - 5 bits

rt - 5 bits

immediate - 16 bits

sw \$t1, 32(\$t2) \Rightarrow opcode = 101011

rs = \$t1 \Rightarrow register \$9 \Rightarrow binary = 01001

rt = \$t2 \Rightarrow register \$10 \Rightarrow binary = 01010

immediate = 32 \Rightarrow binary = 0000000000100000

Complete instruction in

binary =

101011 01001 01010 0000000000100000

Hexadecimal = A52A0020

b)

i) opcode - 6 bits - 101011 = sw

rs - 5 bits - 01000 = \$8 = \$t0

rt - 5 bits - 10000 = \$14 = \$s0

immediate - 0000 0000 0000 0000 0010 = 2

mips instruction = sw \$t0, 2(\$s0)

ii) if it is a 2's complement signed integer it can be converted to a decimal directly. The first bit is 1, which makes the decimal a negative number.

signed integer equivalent = -1391460350