

Question 1: Memory Instruction Translation Translate the following instructions into machine code and use the templates.

1.1. x5, 0x20(x7)

immediate	source register (rs1)	funct3	destination register (rd)	opcode

31
20 19
15 14
12 11
7 6
0

1.2. sw20, -12(x9)

imm7	source register 2 (rs2)	source register 1 (rs2)	funct3	imm5	opcode

31
25 24
20 19
15 14
12 11
7 6
0

Question 2: Memory Accesses Given the integer array whose base address is 0x00004000 answer the following questions. The size of an int is 4 bytes. Assume x10 = 0x00004000.

5	90	100	40	11
0	1	2	3	4

2.1. What is the value of x11 after executing the instruction `lw x11 0(x10)` ?

2.2. What is the value of x12 after executing the instruction `lw x12, 4(x10)` ?

2.3. What is the value of x12 after executing the instructions `addi x10, x10, 4`
`lw x12, 8(x10)` ?

2.4. What are the contents of the array after executing the instruction `sw x7, 12(x10)` ?