

3. In this problem, you will generate most of the microcode for the STI instruction, using the RTL for STI shown below. (16 pts).

MAR ← PC, PC ← PC+1

MDR ← mem[MAR]

IR ← MDR

DECODE

MAR ← PC + SEXT[IR[8:0]]

MDR ← mem[MAR]

MAR ← MDR

MDR ← GRP[IR[11:9]]

mem[MAR] ← MDR

Fill in the microcode table below corresponding to the RTL for the ST instruction. Note that you must fill in zeros, ones, or X's for each of the fields below. Some columns may require multiple bits. Use X's to indicate "don't care" on particular inputs if you like. You must use the encodings shown in the figure on page 6.

State	GATE Signals				LD Signals						Mux Control and Misc. Signals							
	MAR MX	PC	ALU	MDR	PC	REG	CC	IR	MAR	MDR	MAR MX	PCMUX	SRI	ALUK	ADDR1	ADDR2	MIO. EN	R.W
18	0	1	0	0	1	0	0	0	1	0	x	00	xx	xx	x	xx	x	1
33	0	0	0	0	0	0	0	0	0	1	x	x	xx	xx	x	xx	0	1
35	0	0	0	1	0	0	0	1	0	0	x	x	xx	xx	x	xx	x	1
32	0	0	0	0	0	0	0	0	0	0	x	x	xx	xx	x	xx	x	1
11	1	0	0	0	0	0	0	0	1	0	0	x	xx	xx	0	10	x	1
29	0	0	0	0	0	0	0	0	0	1	x	x	xx	xx	x	xx	0	1
31	0	0	0	1	0	0	0	0	1	0	x	x	xx	xx	x	xx	x	1
23	0	0	1	0	0	0	0	0	0	1	x	x	10	11	x	xx	1	1
16	0	0	0	0	0	0	0	0	0	0	x	x	xx	xx	x	xx	x	0