

ITT 432 Midterm Exam Sample

Execute the first four instructions which will be executed in sequence according to the assembly code below and initial data in continuous status. That is, continue the status data from the previous instruction. **Do the three items below for each of the first four instructions.** The number in front of each instruction is its residing memory address, namely PC.

- (a) Write down which instruction is being executed.
- (b) List values of all control signals.
- (c) List input and output values of all participating blocks, including the main control module.
- (d) Draw the path inside each participating multiplexor and the paths of input and output if multiple paths are existed.

Initial status:

\$s1=100, \$s2=200, \$s3=300, \$s4=400, \$s5=500

mem[500] = 500, mem[520] = 700, mem[540] = 50

PC = 800

800 lw \$s2, 20(\$s5)

804 sub \$s1, \$s2, \$s3

808 beq \$s1, \$s4, 2

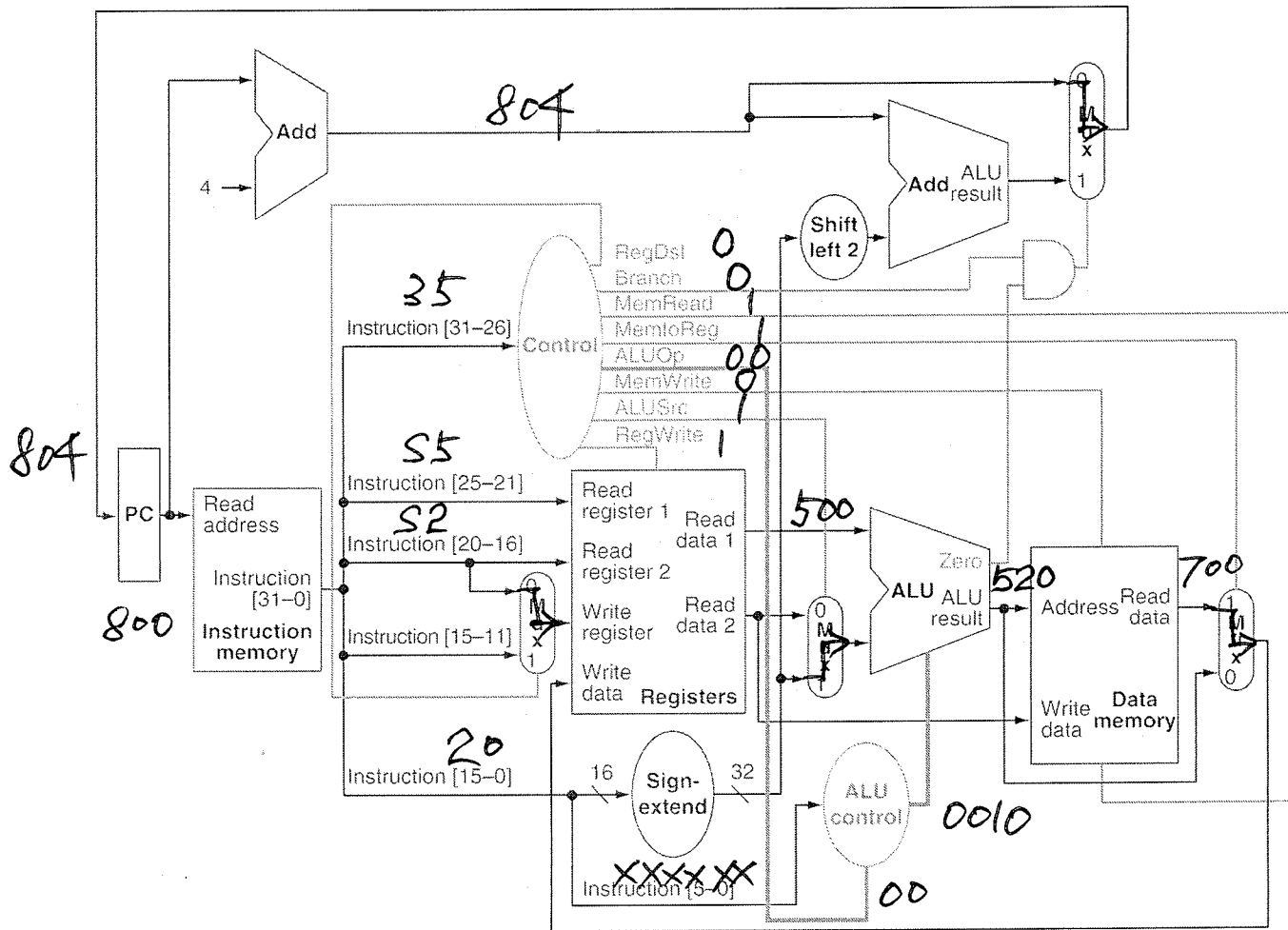
812 add \$s3, \$s4, \$s5

816 lw \$s1, 104(\$s5)

818 lw \$s2, 106(\$s5)

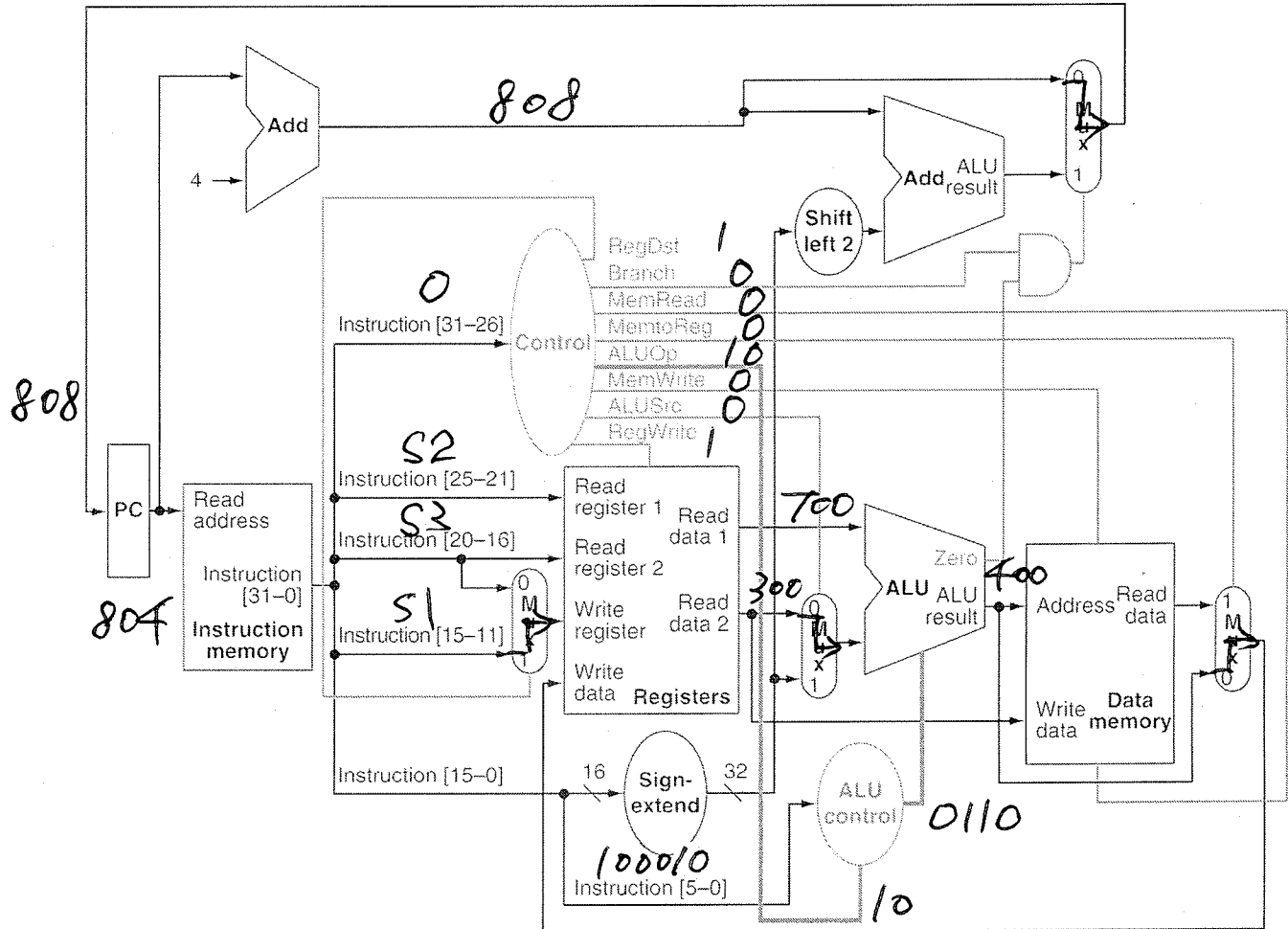
820 sw \$s1, 40(\$s5)

1. (25%) lw \$s2, 20(\$s5)

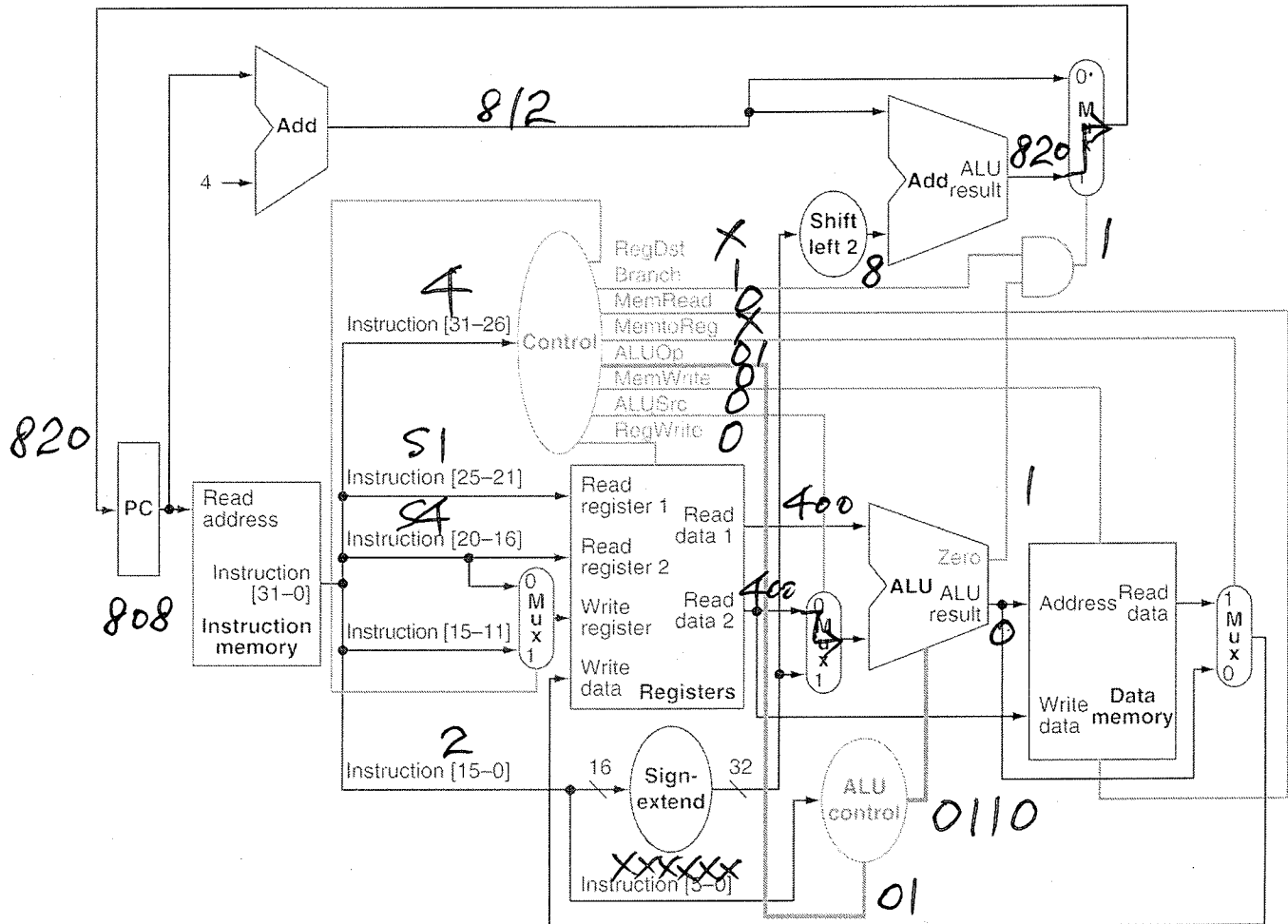


2. (25%)

sub \$s1, \$s2, \$s3



3. (25%) *beq \$s1, \$s4, 2*



4. (25%) $SW \$S1, 40(\$S5)$

