

The University of Michigan - Dearborn
The Electrical and Computer Engineering Department
ECE 372 - Fall 2002
Post-test

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Student Name:

Rules: No uses of calculators, and sign Honor Code.

(1) Write an assembly program that will add the contents of 32 memory locations starting at memory location \$0910. Assume that the final sum does not exceed 8 bits and store the result at memory location \$0940. Start your program at memory address \$100C.

(2) Add the following decimal numbers (- 27 and - 117) using 8-bit 2's complement. You must give the result as an 8-bit 2's complement number.

(3) Represent the following decimal numbers as HEX numbers:

- a) + 19
- b) - 120

(4) Hand assemble the following code segment. Make a listing like that provided by the assembler programs.

```
ORG      $1000
VAR FDB  $3000
TOP LDX  #$2000
      LDAA -17,X
      LDY  $3000
      LDAA VAR
      LDAB #47
      TSTB
      BEQ  TOP
      SWI
```

(5) Write an assembly programming for the following:

- a- Increment the 16-bit number AEEE stored in locations \$2000 (high byte) and \$2001 (low byte).
- b- Subtract CCDD 1010 stored in locations \$2000 (highest byte) - \$2003 from FF32 1004 stored in locations \$2004 - \$2007; Store result in \$2008 - \$200B.
- c- Perform an arithmetic right shift on C012 stored at \$2000 (high byte) - \$2001

- d- Configure PA7 for output. Write a 1, then a 0, and then a 1 to PA7 without modifying any other pins of Port A.
- e- Which instruction is used to globally un-mask interrupts?

(6) Write an assembly program for the system so that Port B keeps outputting the values of the switches from Port C.

(8) Given the following information, write an interrupt service routine for OC1 that will decrement the 16-bit variable COUNT every 20 msec.

TOC1	EQU	\$1016
TMSK1	EQU	\$1022
TFLG1	EQU	\$1023
OC1F	EQU	%10000000
OC1I	EQU	%10000000
20MS	EQU	40000
