Microprocessor and interfacing, Mid Term Exam. Chapter 0~Chapter 5, April 7, 2008.
Please complete the close book part first. Then go to the teaching assistant for the open book part.

Class: **Name:** **Student ID:**

Part I. CLOSE BOOK: Answer directly on the exam sheet.

A. True or false. If your answer is false, please explain your reasons. (24%)

1. (T) A D-type Flip-Flop can be used as a latch that buffers the input signal.

2. (T) All microcontrollers integrate CPU and I/O ports on a chip.

3. (F) 8051 has only 8K memory space. 4K

4. (F) 8051 must connect to a crystal of 11.0592 MHz. Crystals of other frequency are not allowed. 都可以 沒有限定

5. (F) Upon power-up, the 8051 fetches the first opcode from ROM address location 00F0H. 0000H

6. (F) The 2's complement of FFH is 00H. 01H

7. (F) If a CPU has 24 address lines, and each address is for a byte; then 2G bytes can be directly addressed by the CPU. 16M < 2G

8. ( ) A third-party vendor of a chip is a supplier that outside the (original) chip manufacturer, and the second manufacturer of the chip. That is, it is the third company (vendor) that can supply the chip.

9. (T) If a conditional jump is not taken, the next instruction to be executed is the instruction that directly follows the jump instruction.

10. (T) In the 8051, four ports are reserved for I/O ports.

11. (F) A tri-state buffer enters the ~~low~~ high-impedance mode when it is not enabled.

12. (F) In a given byte-addressable computer, memory locations 1000H to 9FFFH are available for user programs. The total number of bytes for user programs is 8FFFH (in decimal). 8FFF+1

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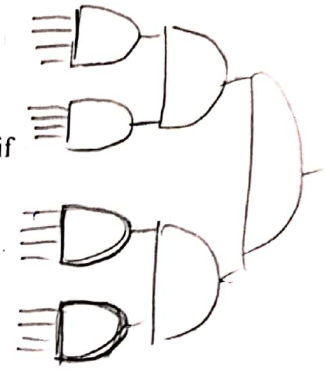
B. Answer the following questions briefly. (36%)

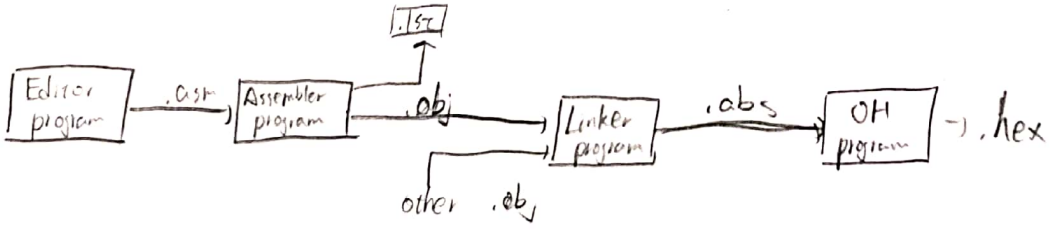
1. (10%)What are the full names of the following 8051 internal components:
   (1) PSW: program status word (2)SFR: special function register
   (3)SP: Stack point (4)ACC: Accumulator (5)DPTR: data pointer register
2. (6%)Assume the content of A register is originally 00H, and R1 is 30H and the content of memory address 30H is FFH. What is the content of A after executing the following instructions.
   (1) MOV A,#AA; ans: AAH (2)MOV A, R0; ans: 30H
   (3)MOV A, @R0; ans: FFH
3. (4%)Please design an address decoder for address F0H. The output will be 1 if and only if the input is F0H. (note that you must specify which bit is LSB)



4. (4%) Assemblers have pseudo-instructions. Can you show two examples?
   CLE , MOV
5. (4%) Write two 8051 instruction that will change the value of the stack pointer.
   POP , PUSH
6. (4%) What does the following assembly programs do?

SETB	P1.7	P1.7=1
AGAIN: MOV	C, P1.0	C=P.1
MOV	P1.7,C	P.7=C
SJMP	AGAIN	無限JMP

7. (4%) What is the function of the OH program? (Hint: During the program development process, we need an editor, an assembler, a linker and the OH program.)
   把"obs"的file轉換成.hex



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April 22, 2015

Class: **Name:** **Student ID:**

Part II. OPEN BOOK: Answer directly on the exam sheet.

1. (1) (10%)Please disassemble the following code.

(2)(10%)What does the program do?

0020	12	LCALL
0021	00	NOP
0022	27	ADD A,@R1
0023	80	SJMP
0024	F0	MOVX @DPTR,A
0025	00	NOP
0026	FF	MOV R7,A
0027	7D	MOV R5,#1
0028	FF	MOV R7,A
0029	FE	MOV R6,A
002A	22	RET

2. (1)Refer to Example 5-27 (p.133).(10%) Translate the program into machine code (binary code) by hand. (2) (10%)What is the execution time of the program if the system has an 8051 with frequency of 12M Hz?

Line Number	memory address	memory content	Assembly instruction	machine cycles

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