

- Q1.** In an 80486 processor that is working in real mode and 16-bit mode: Suppose that: CS = 1000_H, ES = 8000_H, DS = A000_H, SS = 7000_H, ESI = 0000 0200_H, EDI = 0000 0410_H, EBP = 0000 2300_H, EBX = 0000 0200_H, EAX = 0000 0400_H, ECX = 0000 0020_H, EDX = 0000 0008_H. For the instructions given below determine the following. **[Give Values only in Hex only]** **[4]**

a) MOV [BP+SI+2000_H], CX

Memory Address	
Addressing Mode	
Machine Code	

- Q2.** Replace the following program segments by a single instruction of 80486. You can assume that all flags (except Trap and Interrupt) are reset at the beginning of each of these program segment **[Clarification: Each program segment achieves a certain final result. You need to give a single instruction that will achieve the same result. The single instruction needs only achieve the final result]** **[15]**

	Program	Instruction		Program	Instruction
A	PUSH AX PUSH BX POP AX POP BX		B	PUSHF PUSH BP MOV BP, SP MOV AH, [BP+2] POP BP POPF	
C	CMP EBX, EAX JNE X1 MOV EBX, ECX JMP X2 X1: MOV EAX, EBX X2:		D	MOV [0200], ESP* PUSH EAX PUSH ECX PUSH EDX PUSH EBX PUSH DWORD PTR[0200] PUSH EBP PUSH ESI PUSH EDI	
E	PUSHF MOV BH, FF CMP BL, 0 JL X1 NOT BH X1: POPF		F	PUSHF PUSH AX MOV AX, [SI] MOV ES: [DI], AX POP AX INC SI INC SI INC DI INC DI POPF	

*DS: [0200] – is just a temp location – what happens to it does not matter in the final result.

Q3. For the following Instructions what will be the machine cycles executed by 8086. Enter the machine cycles in proper order **[4]**

	Instruction	Cycles		Instruction	Cycles
A	ADD [BX+SI+1000] , CX		B	XCHG AX,[BX]	
C	NOP		D	CMP [SI],AX	

Q4. If a processor is working at 5 MHz and the memory access time is 750ns. The number of wait states required will be _____, considering an address set-up time of 110ns, data set-up time of 40ns with a latching and buffer delays of 30ns. **[2]**

Q5. What will be the effect of executing the following code snippet on an 8086 processor? **[2]**

```
MOV    BX, FFFFH
AND    BX, 0700H
PUSH   BX
POPF
```

Q6. Write an 80486 ALP that will examine a series of memory locations for small alphabets. If a memory location has a small alphabet it will convert it into capitals. If the memory location does not have a small alphabet it will not modify the contents of the memory location. The series of memory location to be examined start at ***alph1***. The count of memory locations to be examined is stored in ***cnt1*** and will not exceed 1000_d. The checking and the conversion of one small alphabet to one capital alphabet must be done using a macro called CAPSON. **[13]**

[YOU CAN USE THE MAIN ANSWER SHEET FOR WRITING THE PROGRAM]