科目：__組合語言__　系級組別：__資工二年級__　考試日期：106年12月27日第 2 節
命題教授：__周老師__先生(簽章)　　月　　　日
學生姓名：_____　學生學號：_____　系　　級：_____

Answer the following questions clearly as required:　　　　　　**PARTI　Total 70 Pts**

PART I Given the following four options, Choose one correct answer and write within the bracket. 2Pt Each

1. (　) What will be the value of BX after the following instructions execute?

      mov   bx, 029D6h
      xor   bx, 8181h

   a).B867h　　　　b). A857h
   c). A557h　　　d). 29D6h

2. (　)Show the value of AL after shift or rotation instruction has executed:

      mov al, 0D4h
      shr   al, 1

   a). 5Ah　　　　b).　3Bh
   c). 6Ah　　　　d).　4Ah

3. (　) Show the value of AL after shift or rotate instruction has executed:

      mov al, 0D4h
      sar   al, 1

   a). FBh　　　b). ABh
   c). EBh　　　d). EAh

4. (　) Show the value of AL after shift or rotate instruction has executed:

      mov al, 0D4h
      rol   al, 1

   a). A9h　　　　　b). B6h
   c). AFh　　　　　d). A8h

5. (　) What will be the contents of AX and DX after the following operation?

      mov dx, 0
      mov ax, 222h
      mov cx, 100h
      mul cx

   a). DX = 0000h, AX = 2220h　　　　b). DX = 0022h, AX = 2000h
   c). DX = 0022h, AX = 2200h　　　　d). DX = 0002h, AX = 2200h

6. (　) What will be the contents of AX after the following instructions have executed?

      mov ax, 63h
      mov bl, 10h
      div bl

   a). 0603h　　b). 0300h　　c). 0306h　　d). 0600h

7. (　) show the value of AL after shift or rotate instruction has executed:

      mov al, 0DAh
      sar   al, 4

   a).　ABh　　b). FDh　　c).　EFh　　d).　FAh

8. (　) Which of the following blocks of instructions will multiply the contents of the EDX register by 36?

   a). mov ebx,edx　　　　　　　　b).　mov ebx,edx
      shl edx,3　　　　　　　　　　　shl edx,5
      shl ebx,2　　　　　　　　　　　shl ebx,2
      add ebx,edx　　　　　　　　　　add edx,ebx

   c).　mov ebx,4　　　　　　　　　d).　mov ebx,edx
      add edx,ebx　　　　　　　　　　shl ebx,4
      shl edx,2　　　　　　　　　　　shl edx,2
      shl ebx,3　　　　　　　　　　　add edx,ebx
      add edx,ebx

9. ( ) What will be the value in AL after the following instructions execute?

```
mov   al, 'd'
and   al, 'c'
```

a). 60h   b). 50h   c).   40h   d). 30h

10. ( )What will be the value of AX after the following instructions execute?

```
mov   ax, 7896h
or    ax, 0ffffh
```

a). 7896h   b). 6987h   c). 0ffffh   d). ABCDh

PART II Multiple choice questions, choose the correct answer from the given answers below: 2Pts each =20

11. ( ) What advantages does INVOKE offer over the CALL instruction?
   a). None. INVOKE is just a synonym for CALL.
   b). INVOKE permits you to pass arguments separated by commas.
   c). CALL does not require the use of the PROTO directive.
   d). INVOKE executes more quickly than CALL.

12. ( ) Which of the following INVOKE statements are invalid?
   a). INVOKE mySub, [array+2]
   b). INVOKE mySub, 30
   c). INVOKE mySub, ADDR myList
   d). INVOKE mySub, PTR myList

13. ( ) Assuming that a procedure contains no local variables, a stack frame is created by which sequence of actions at runtime?
   a). arguments pushed on stack; procedure called; EBP pushed on stack; EBP set to ESP
   b). EBP pushed on stack; arguments pushed on stack; procedure called; EBP set to ESP
   c). arguments pushed on stack; EBP pushed on stack; EBP set to ESP; procedure called
   d). arguments pushed on stack; procedure called; EBP set to ESP; EBP pushed on stack

14. (   ) Consider the Mysub procedure given in Example 1 below.
   Example 1: The MySub Procedure

```
MySub PROC, N:DWORD
    cmp N,7
    je  L1
    mov eax,N
    inc eax
    INVOKE MySub,eax
  L1: ret
MySub ENDP
```

   Which of the following statement is true?
   a). MySub uses 4 doublewords of stack space each time it is called.
   b). MySub is a recursive procedure.
   c). MySub terminates when N is equal to 17.
   d). the parameter N is equivalent to [EBP+4]

15. ( ) Which instruction causes the ESI and EDI registers to be incremented by the MOVSB instruction?
   a). CLC   b). REP   c). STD   d). CLD

16. (   ) The MOVSB instruction uses which register as the source operand?
   a).   ESI   b). EDI   c). EAX   d). ECX

17. (   ) How does using the LEA instruction differ from using the OFFSET operator with MOV?
   a). LEA cannot have an indirect source operand, whereas MOV-OFFSET can.
   b). MOV-OFFSET retrieves a 32-bit offset, whereas LEA retrieves a combined segment-offset address.
   c). LEA is effective for obtaining the address of a stack parameter.
   d). The source operand used by LEA must be a constant value known at assembly time.   **PAGE 2**

18. ( ) What will be the final values of CX and DX when the following code executes?

```
        .data
        array  SWORD 8,2,3,5,-4,6,0,4
        .code
            mov cx,1
            mov esi,2
            mov ax,array[esi]
            mov bx,array[esi+4]
            cmp ax,3
            jae L2
            cmp bx,4
            jb  L1
            jmp L3
        L1: mov cx,4
        L2: mov dx,5
            jmp L4
        L3: mov dx,6
        L4:
```

a). CX = 4, DX = 5   b). CX = 1, DX = 6   c). CX = 1, DX = 5   d). CX = 4, DX = 6

19. ( ) Which of the following instructions will divide the unsigned integer in EBX by 8?
a). shr ebx, 8   b). shr ebx,3   c). sar ebx, 8   d). shl ebx, 3

20. ( ) What will be the hexadecimal values of DX and AX after the following instructions have executed?

```
        mov ax,6B49h
        mov dx,0095h
        shl ax,1
         rcl dx,1
```

a). DX = 0148h, AX = C691h   b). DX = 012Ah, AX = C9A2h
c). DX = 012Ah, AX = D692h   d). DX = 024Bh, AX = D692h

PART III Answer the following questions clearly. Write your answers below:
Example 3

```
        1:    .data
        2:    str1 BYTE "AAAX",0
        3:    str2 BYTE 10 DUP(0FFh)
        4:    .code
        5:        mov edi,0
        6:    L1:      mov al,[str1+edi]
        7:        cmp al,0
        8:        je   L2
        9:        mov [str2+edi],al
        10:       inc edi
        11:       jmp L1
        12:   L2:
```

21. ( ) After Example 3 executes, what value will be stored at offset **[str2+4]**?   **4Pts**
a). 0FFh   b). ASCII code of "X"   c). 00h   d). Cannot be determine.

22. ( ) In Example 3, if we changed lines 7, 8, and 9 to the following, what value would be stored at offset **[str2+4]** after the loop finished?   **4Pts**

```
        7:     mov [str2+edi],al
        8:     cmp al,0
        9:      je   L2
```

a). 0FFh   b). ASCII code of "X"   c). 00h   d). Cannot be determined.

23. In th following instruction sequence, show the changed values of AL where indicated, in binary: **4Pts**
mov al,11001111b
and al,00101011b   a)._____
mov al,4Bh
and al,6Ch   b)._____   **PAGE 3**

```
mov al,00111100b
or   al,82h              c). _____
mov al,94h
xor al,37h               d). _____
```

24. What will be the final value of ESI when the following code executes? (Answer: _____)   **4Pts**

```
        .data
        array  SWORD 8,2,3,5,-4,6,0,4
        .code
            mov esi,0
            mov ecx,LENGTHOF array
        L1: mov ax,array[esi]
            cmp ax,0
            pushf
            add esi,TYPE array
            popf
            Loopne L1
```
a). 00000006h   b). 00000007h   c). 0000000Ch   d). 0000000Eh

25. What will be the hexadecimal values of DX and AX after the following instructions have executed?   **4Pts**
```
mov dx,-22
mov ax,2
imul dx
```

Answer: DX= _____   AX = _____

26. Write a sequence of instructions that divide −16 by 5, using the IDIV instruction. Use the EBX register as the divisor.   **4Pts**
Answer:

27. Using the following data definitions, write instructions that use MOVSB to copy all the bytes from **source** to **target**:   **4Pts**
```
        .data
        source BYTE 50 DUP(?)
        target BYTE 100 DUP(?)
```

28. Code a single instruction that clears bits 0, 3, and 4 in the AL register.   **2Pts**
Answer: