Assembly Language – CS304
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Midterm (No calculators allowed)
8th November 2017 – 45 Mins.

This exam in 4 pages, make sure to answer all the questions

Choose the correct answer **[30 points]**

1. The process of moving the program into memory is called ……. .
   a. Assembling b. Loading
   c. Linking d. Executing

2. Intel machines use an ISA approach known as …….. .
   a. CISC b. RISC
   c. BIOS d. RADD

3. Generally each mnemonic is equivalent to …….. binary CPU instruction
   a. 1 b. 2
   c. 3 d. different

4. The control unit ……. the instruction's function to determine what the instruction will do.
   a. fetch b. store
   c. decode d. execute

5. If the program needs to read the same data a second time, it looks for the data in ……..
   a. RAM b. Cache
   c. HD d. Magnetic tape

6. ……. technology provide multiple redundant functional units e.g. ALU.
   a. Pipeline b. Super scaler
   c. Multitasking d. HyperThreading

7. The decimal equivalent of the smallest negative number stored in 4-bit is …….. .
   a. 15 b. 8
   c. -15 d. -1

8. The 8-bit, signed number (111110), is equivalent to …… in Hexadecimal.
   a. 3E b. 42
   c. 190 d. 66

9. The 8-bit, signed number (10111110), is equivalent to …… in Decimal.
   a. 190 b. -190
   c. 66 d. -66

10. In …… memory mode, direct access to system memory and hardware devices can cause the user application to be terminated.
    a. Real
    b. Protect
    c. System management
    d. Flat segment

11. ……. technique used to manage large programs, i.e. Part of running program is in memory, part is on disk.
    a. Scheduler
    b. Paging
    c. Flat segment
    d. Dual core

12. In flat segmentation model, …… bits hold the address of an instruction or variable value in their cache.
    a. 16
    b. 32
    c. 20
    d. 65

13. …….. is a valid integer for MASM.
    a. A23h
    b. 30d
    c. 0A23
    d. (c and b)

14. In assembly language, ……. are not part of the internal instruction set.
    a. mnemonics
    b. operands
    c. directives
    d. (b and c)

15. The instruction (`var1 BYTE 10,3 DUP(0),20`) reserves …… bytes of memory
    a. 5
    b. 3
    c. 33
    d. 13

16. `x` in the following instruction (`x DWORD 8FFFh`) is …… .
    a. invalid
    b. positive
    c. negative
    d. (a and b)

17. Instructions in x86 can have ….. .
    a. zero operands
    b. one operand
    c. two operands
    d. (a,b and c)

18. In …… order, the most significant byte occurs at the first (lowest) memory address.
    a. Little Endian
    b. Middle Endian
    c. Big Endian
    d. North India

19. The value of count in (`count TEXTEQU %(3*2)`) is …….
    a. "3*2"
    b. 6
    c. "6"
    d. invalid

20. In MASM assembly, …… is part of the program .exe after assembling.
    a. `nop`
    b. `( .code )`
    c. `count=500`
    d. `PI EQU <3.1416>`

Based on the following code answer the following points **[5 Points]**

```
1   INCLUDE Irvine32.inc
2
3   .data?
4   var1 BYTE   82h
5   var2 DWORD  0AB2211h
6   var3 WORD   3 DUP (?)
7   count=32.5
8
9   main PROC
10      mov ax, var2
11      mov bx, var1
12      mov cl, [var1+1]
13      add [var1+4], 1
14      mov ch, [var1+4]
15
16      call dumpregs
17      exit
18
19  main ENDP
20  END main
```

21. The total number of reserved bytes for the Data section of this program in its .exe is ……. bytes .
    a. 5 b. 6
    c. 12 d. zero

22. Executing line 10 will result ……
    a. ax=0AB22h b. ax=22ABh
    c. ax=2211 d. error

23. Executing line 11 will result ……
    a. bx=0AB82h b. bx=8200h
    c. bx= 8211h d. error

24. Executing line 12 will result ……
    a. cl=0 b. cl=0ABh
    c. cl=11h d. error

25. Executing lines 13, 14 will result ……
    a. ch=12h b. ch=0ACh
    c. ch=1 d. error

Based on the following code answer the following points **[5 Points]**

```
1   INCLUDE Irvine32.inc
2
3   .data?
4
5   var1 BYTE   0FFh, 80h, 1000b, 3 DUP (0FFh)
6   count = $-var1
7
8   main PROC
9        mov ax, count
10       mov bl, var1
11       inc bl
12       mov cl, [var1+1]
13       add cl, 80h
14       mov ch, [var1+3]
15       sub ch, 1
16
17       call dumpregs
18       exit
19
20  main ENDP
    END main
```

26. Executing line 9 will result ……
    a. ax= 4
    b. ax=04h
    c. ax= 6
    d. error

27. Executing lines 10, 11 will result ……
    a. SF=0 , CF=0, and OV=0
    b. SF=0 , CF=1, and OV=0
    c. SF=0 , CF=0, and OV=1
    d. SF=0 , CF=1, and OV=1

28. Executing lines 12, 13 will result ……
    a. SF=0 , CF=0, and OV=0
    b. SF=0 , CF=1, and OV=0
    c. SF=1 , CF=0, and OV=1
    d. SF=0 , CF=1, and OV=1

29. Executing lines 14, 15 will result ……
    a. SF=1 , CF=0, and OV=0
    b. SF=0 , CF=1, and OV=0
    c. SF=1 , CF=1, and OV=0
    d. SF=1 , CF=0, and OV=1

30. Executing lines 14,15 will result ……
    a. ch=0FEh
    b. ch=1h
    c. ch=0
    d. error

Do your best, Good Luck