1. Given
AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY
1D72:0109 7D06 JNL 0118

What is the signed decimal value of the number in the AX register?
-16

3. What is 16.4375 base 10 in binary?
010000.01110

4. Here is a short sequence o code: 7413A3EBCD167D213C04EBF0EB15. All of the instructions are a word long. The forth instruction operator is:
JGE

7. The "LOOPNZ" instruction is equivalent to which of the following instructions?
DEC CX, JNE

8. Given AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000
DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D OV UP EI PL NZ NA PO NC

How many bytes will the processor jump if the conditions for a jump were met?
9

9. Given: AX=0353 BX=0534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000
DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY
What will the IP value be after a "t" command is executed in DOS Debug?
010B

13. Given: AX=2247 BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000
DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0106 NV UP EI NG NZ NA PE NC
1D72:0106 EBOF JMP 0118

What will the ip value be after a "t" command is executed in DOS Debug?
0118h

15. What is the hexadecimal encoding for adding BX with CX and storing thee result in BX?
01CB

19. If CX is 0002 what will CX be after a "LOOP" instruction?
0001

20. In x86 architecture, ALU stands for which of the following?

Arithmetic Logic Unit

23. What is the hexadecimal encoding for “JGE” for a jump back 12 bytes?
7DF2

24. Moore’s law has accurately predicted the growth rate in the number of transistors per die for the last 40 years. What is that rate?
Doubling every 18-24 months

25. AND’ing 10H and 2FH will result in which of the following?
0

32. What command in DEBUG would be used to execute interrupts?
P

The number of nibbles in a double word are:
8

F2011

1. Given:
0B0E:0200 57 65 6C 63 6F 6D 65 20-74 6F 20 74 68 65 20 66
0B0E:0210 69 72 73 74 20 64 61 79-20 6F 66 20 74 68 65 20
0B0E:0220 72 65 73 74 20 6F 66 20-79 6F 75 72 20 6C 69 66
0B0E:0230 65 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00

An ASCII message begins at memory location 0200, what is the message?
Welcome to the first day of the rest of your life

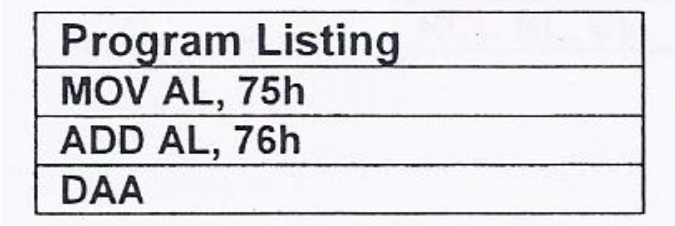
2. The instruction MOV DX, BADD is what addressing mode?
Immediate

3. Which of the following is the hexadecimal encoding for adding BX with CX and storing the result in CX?
03CB

4. What is the advantage of Assembly Language over C language?
The assembler creates much faster execuable code

5. What is 18.4375 base 10 in binary?
010010.01110

6. For the instruction sequence below, determine the contents of the register of the register AL after this program is executed:



Program Listing
MOV AL, 75h
ADD AL, 76h
DAA

51H

7. In x86 architecture, ALU stands for which of the following?
Arithmetic Logic Unit

8. A microprocessor with a 33-bit address bus could access how much memory?
8 GB

9. What is the hexadecimal encoding for "JGE" for a jump back 12 bytes?
7DF2

10. Given:
AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010F NV UP EI NG NZ NA PO NC
1D72:010F 7d18 JGE 0128

How many bytes in decimal will the processor ump if the conditions for a jump are met?
24

11. Moore's law has accurately predicted the growth rate in the number of transistors per fie for the last 40 years. What is that rate?
Doubling every 18-24 months

12. The number of bytes in a word are
2

13. Determine the contents of register BL after the following instructions have been executed

Program Listing
MOV BL, E2H
MOV CL, 0100b
ROL BL, CL

2EH

14. How many bit(s) is/are required to represent a range of dcimal numbers from 0 to 127?
7

15. What high level language is the propeller programmed in?
Spin

16. In the propeller microcontroller, the command “dira[4..9] := %000000” would cause the processor to do which of the following?
Sets the propeller pins P4 through P9 as input pins

17. Which command would you use to execute another core in the propeller microcontroller?
Cognew

18. How many cores does the propeller microcontroller have?
8

19. In the propeller microcontroller, the command “waitcnt(clkfreq^10 + cnt)” would cause the processor to do which of the following?
Create 10 second delay

20. The Acronym ADC in microcontrollers stands for which of the following?
Analog to Digital Converter

21. The acronym PWM used in the parallax propeller and microchip pic18, is defined as:
Pulse width modulation

22. How many bits does the PIC18 microcontrolleer used in the pickit 3 debug express have?
8

23. Which of the following would be used to set the TRISA register to control the direction of the pic18 port to input?
1

24. In the pic18 with trisd = 0b01111111, what is te configuration of the port d?
Bit 7 of port d is set to output

25. In the pic18 with trisd = 0b11110000 and latd = 0xAA, what value will be on port d and shown on the leds?
0A

26. On the arduino platform, what is the programming language used?
C

27. Given:
AX=FFD0 BX=3534 CX=0000 DX-=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0111 NV UP EI NG NZ NA PO CY
1D72:0111 EB08 JMP 0119

What will the IP value be after a "t" command is executed in DOS Debug?
0119h

28. How many bytes are there in this short sequence of code?
B400CD164CCD21CD20
9

29. In x86 architecture, BIU stands for which of the following?
Bus interface unit

30. Here is a short sequence of code: 7413EBA3CD167D213C04EBF0EB15. All of the instructions are a word long. The fifth instruction operator is:
CMP

31. The ASCII codes for space, space, carriage return, line feed, end of string in decimal are:
32, 32, 13, 10, 36

32. A "NOP" instruction in a program will:
Perform a no operation

33. Given:
AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ Na PO CY
1D72:0109 7D06 JNL 0118

What is the signed decimal value of the number in the AX register?
-16

34. Which of the following DOS Debug instructions would set a break point at memory location 010C?
G= 100 10C

35. In adding 5+7 through a 4 bit integer unit, the state of the OF and CF flags after the add instruction would be:
OF=01 CF=0

36. Given:

AX=FFD0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=00D OV UP EI NG ZR NA PO NC
1D72:010D 7509 JNZ 0116

What will the IP value be after a "t" command is executed in DOS Debug?
010Fh

37. What are the contents of DX after this program has been run:

```
MOV DX, 11h
MOV CX, [5512]
MOV BX, 5511h
SUB DX, [BX]
AND BX, FFFF
```

Memory location	Contents
5514	24
5513	D8
5512	00
5511	21
5510	00

FFF0h

38. Which of the following DOS Debug instructions would be used to change the IP register to 010C?
RIP

39. What is the number, 1010.0101 base 2 in decimal?
10.31

40. What command in DEBUG would be used to step through a program line by line?
T

41. AND'ing 1Fh and 02H will result in which of the following?
02

42. How many addresses lines would be required to address 64 MB directly?
26

S2012

1. What is the advantage of Assembly language over C language?
The assembler creates much faster executable code

2. How many address lines would be required to address 128 MB directly?
27

3. In the x86 lab part 3 Hello MASM program in the original code, what is the address of the byte used to start the number in the sequence “Hello World 0”?
020E

4. Given:
0B0E:0200 57 65 6C 63 6F 6D 65 20-74 6F 20 41 73 73 65 6D
0B0E:0210 62 6C 79 20 4C 61 6E 67-75 61 67 65 00 00 00 00

An ASCII message begins at the memory location 0200, what is the message?
Welcome to Assembly Language

5. Which of the following DOS Debug instructions would be used to change the IP register to 0110?
RIP

6. Moore’s law has accurately predicted the growth rate In the number of transistors per die for the last 40 years. What is that rate?
Doubling every 18-24 months

7. Which of the following DOS Debug instructions would set a break point at memory location 010C?
G = 100 10C

8. AND’ing 1FH and 02H will result in which of the following?
02

9. If CX is 0000 what will CX be after a “LOOP” instruction?
FFFF

10. The number of bits in a word are:
16

11. In 86 architecture, ALU stands for which of the following?
Arithmetic Logic Unit

12. Given
AX=0353 BX=0534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY
1D72:0109 7D06 JGE 0118

What will the IP value be after a “t” command is executed in DOS Debug?
010B

13. What is the number, 1010.0101 base 2 in decimal?
10.31

14. How many cores does the propeller microcontroller have?
8

15. What is the hexadecimal encoding for “JGE” for a jump back 12 bytes?
7DF2

16. What command in DEBUG would be used to step through a program line by line?
T

17. Here is a short sequence of code: 7413EBA3CD167D213C0$EBF0EB15. All of the instructions are a word long. The third instruction operator is:
INT

18. In MASM, with a “MOV CX, 24” instruction, and a “LOOP” instruction, in decimal how many times will the program loop?
24

19. Given:
Ax=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D NV UP EI PL NZ NA PO NC
1D72:010D 7DF6 JNL 0116

How many bytes in decimal will the processor jump if the conditions for a jump were met?
-10

20. Determine the contents of registers BL after the following instructions have been executed:

Program Listing
MOV BL, E2H
MOV CL, 08H
ROL BL, CL

E2H

21. The ACII Codes for space, space, carriage return, line feed, end of string decimal are:
32, 32, 13, 10, 36

22. AND’ing 10H and 2FH will result in which of the following?
a. 0

23. A “NOP” instruction in a program will:
Perform a no operation

24. Given:
AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY
1D72:0109 7D06 JGE 0118

What is the signed decimal value of the number in the AX register?
-16
25. How many address lines would be required to address 64 MB directly?
26

26. What command in DEBUG would be used to execute interrupts?
P

27. What high level assembly language is the propeller programmed in?
spin

28. Which of the following DOS Debug instructions would be used to change the IP register to 010C?
RIP

29. The acronym PWM used in the parallax propeller and microchip pic18, is defined as:
Pulse width modulation

30. Which command would you use to execute another core in the propeller microcontroller?
Cognew

31. Given:
AX=FFD0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0111 NV UP EI NG NZ NA PO CY
1D72:0111 EB08 JMP 0119

What will the IP value be after a “t” command is executed in DOS Debug?
0119h

32. The instruction MOV CX, DADD is what addressing mode?
Immediate

33. In the pic18 with trisd = 0b00001111 and latd = 0xAA, what value will be on Port D and shown on the LEDs?
A0

34. Given:
AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010F NV UP EI NG NZ NA PO NC

How many bytes in decimal will the processor jump if the conditions for a jump are met?
24

35. In the propeller microcontroller, the command “dira[4..9] : %111111” would cause the processor to do which of the following?
Sets the Propeller pins P4 through P9 as output pins

36. What are the contents of DX after this program has been run:

```
MOV DX, 11h
MOV CX, [5512]
MOV BX, 5511h
SUB DX, [BX]
AND BX, FFFF
```

Memory location	Contents
5514	24
5513	D8
5512	00
5511	21
5510	00

FFF0h

37. The number of nibbles in a word are:
4

38. In the propeller microcontroller, the command “waitcnt(clkfreq*10 + cnt)” would cause the processor to do which of the following?
Create 10 second delay

39. The “LOOPNE” instruction is equivalent to which of the following instructions?
DEC CX, JNE

40. Given:
AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D NV UP EI NG NZ NA PO NC
1D72:010D EB07 JMP 0114

How many bytes will the processor ump if the conditions for a jump were met?
7

41. On the Arduino platform, what is the programing language used?
c

42. What is the hexadecimal encoding for loading AX with a word (value) from memory location 0820h?
A12008

43. Which of the following would be used to set the trisa register to control the direction of the pic18 port to input?
1

44. The acronym ADC in microcontrollers stands for which of the following?
Analog to Digital Converter
45. In adding 5+5 through a 4 bit integer unit. The state of the OF and CF flags after the add instruction would be
OF=1 CF=0

S2007

1. Given:
AX=FFD0 BX=3534 CX=0000 DX=0190 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010E OV UP EI PL NZ NA PO CY
1D72:0109 7D06 JNL 0118

What will the IP value be after a "t" command is executed in DOS Debug?
0110

2. The instruction MOV BX, 2BAD is what addressing mode?
Immediate

3. What is the hexadecimal encoding for "JNL" for a jump back 10 bytes?
7DF4 if that's not there try 7DF6

4. How many address lines would be required to address 64 MB directly?
26

5. The number of nibbles in a double word are:
8

7. Int 21h, Function 09h requires three things set up before calling in order to correctly print a string, Hello_msg. They are:
DS = SEG Hello_msg, DX = OFFSET Hello_msg, Hello_msg terminated with 24h

21. What are the contents of DX after this program has been run:

```
MOV DX, 11h
MOV CX, [5512]
MOV BX, 5511h
SUB DX, [BX]
```

Memory location	Contents
5514	24
5513	D8
5512	00
5511	21

FFF0h

22. In using INT 10h to move the screen cursor to return on the same line, what value must be in the AX register?

23. Given:
AX=FFD0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D OV UP EI PL NZ NA PO NC
1D72:010D 7D09 JNLE 0118

What will the IP value be after a "t" command is executed in DOS Debug?
010Fh

24. Which of the following DOS Debug instructions would be used change the AX register?
RAX

25. How many bytes are there in this short sequence of codeB815B400CD168A3CCD20
10

S2006

1. Given:
AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP 0109 OV UP EI PL NZ NA PO CY
1D72:0109 7D06 JNL 0118

What is the signed decimal value of the number in the AX register?
-16

2. What are the contents of BX after this program has been run:

```
MOV AX, 11h
MOV CX, [1101]
MOV BX, 1100h
SUB AX, [BX]
```

Memory location	Contents
1103	24
1102	D8
1101	00
1100	21

1100h

5. Determine the contents of register BL after the following instructions have been executed:

Program Listing
MOV BL, E2H
MOV CL, 1000b
ROL BL, CL

E2H

6. Which of the following DOS Debug instructions would set a break point at memory location 010E?
G=100 10E

12. How many bytes are there in this short sequence of code? B400CD16CD20
6

1010 0110 in 2's complement in base 10.
-90

17. Given:
13A7:0110 CD 20 32 20 54 48 69 73-20 69 73 20 74 68 65 20
13A7:0120 66 69 72 73 74 20 4D 69-64 74 65 72 6D 0D 24 D9
13A7:0130 00 C6 00 00 00 00 00 00-00 00 00 00 00 0 0 00 00

An input buffer is at memory location 0114, what is the size of the buffer in decimal?
84

A microprocessor with a 32-bit address bus could access how much memory?
4 GB

33. The number of nibbles in a double word are:
8

S2002

23. The instruction MOV BX, [SI] is what
Register indirect

13. Given: AX=2247 BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0106 NV UP EI PL ZR NA PE NC
1D72:0106 750F JZ 0118

What will the ip value be after a "t" command is executed in DOS Debug?
0118h

What are the contents of AX after this program

```
MOV AX, 0010h
MOV BX, 1011h
SUB AX, [BX]
```

Memory location	Contents
1013	F8
1012	00
1011	21

7. Int 21h, Function 09h requires three things set up before calling in order to correctly print a string, welcome_message. They are:
DS = SEG welcome_message, DX = OFFSET welcome_message, welcome_message terminated with 24h 24 =$

15. Int 10h uses what fuction code to write a character to the screen and advance the cursor one by one character position?
0Eh

14. Determine the contents of register AL after the following instructions have executed:

```
MOV BL, 7Eh
MOV AL, F0h
XOR BL, AL
```

F0h

12. Given
AX=FFD0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000
DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010C NV UP EI NG NZ NA PO CY
1D72:010C 7D06 JNL 0116

What will the IP value be after a “t” command is executed in DOS Debug?
No answer available

11. Which instruction below loads register CX, with the word beginning at physical address 40708b?
MOV CX, [0308]

10. Here is a short sequence of code: B400CD163C4A74043C6A7513. All of the instructions are two bytes long. The forth instruction operator is:
JZ

17. The instruction JNGE compares which of the following?
The sign flag and overflow flag to see if the NOR of the two fags is equal to

15. Int 10h uses what function code to write a character to the screen and advance the cursor by one character position?
0Eh

10. Here is a short sequence code B400CD163C4A74643C6A7513. All of the instructions are two bytes long. The second instruction operator is:
int

9. Which instruction below loads register BX, with the word beginning at physical address 90802h? Assume DS=9020, BX=2800
MOV BX, [0602]

8. You add 9+8 through a 4-bit integer unit. The sate of the OF and CF flags after the add will be: (First digit the OF, second is the CF)
11