

# ASSEMBLY LANGUAGE PROGRAMMING CS3200 TEST 1 PRACTISE EXAM

e-mail: vman@newsguy.com

1. What X16 Assembly Language Instruction does the following bit pattern correspond to?

a. F028h

2. Give the bit pattern that the corresponds to the following X16 assembly language instruction:

a. addh r0,y

3. Given the following

A DH (5)

B DH (10)

C DH (20)

Write an assembly code segment to add all three numbers, putting the result in "C"

4. Implement the following higher level statement in X16 assembly language:

SUM = 0;

FOR I = 1 TO 10 DO ( SUM = SUM + I)

5. Given the following

stack dh 10h

a dh (5)

b dh (34)

c dh (10h)

result dh (0)

Step by step, what will the following operations do?

movh a,r0

addh b,r0

addh c,r0

# ASSEMBLY LANGUAGE PROGRAMMING CS3200 TEST 1 PRACTISE EXAM

e-mail: vman@newsguy.com

```
movh r0,result
```

*What is the final contents of the affected registers and memory?*

6. Write a short code segment to implement the following higher level language statement:

```
A=A+B-2*C
```

7. Given the following:

```
stack    dh    10h
a         db    (00101010b)
b         db    (11010111b)
c         db    (FFh)
result   db    (0)
```

Step by step, what will the following operations do?

```
notb a,b
```

```
iorb a,c
```

```
xorb b,result
```

What is the final contents of the affected registers and memory?

8. In the structure of an X16 Program you must have either a \_\_\_\_\_ code block or a \_\_\_\_\_ code block.

9. How does the computer do math?

10. Why is the way computers do math different?

# ASSEMBLY LANGUAGE PROGRAMMING CS3200 TEST 1 PRACTISE EXAM

e-mail: vman@newsguy.com

11. PSW (Program Status Word) What is it's purpose? How many bits does it occupy?

12. In computer Math there are Flags, list and identify their purpose.

13. Assuming M=16, Given the following

```
NUM1=13Ah
NUM2=54h
Mem{NUM1}=73h
Mem{NUM2}=14h
Mem{18Eh}=FF00h
```

Questions:

NUM1=NUM2 =?

Mem{NUM1} + Mem{NUM2}=?

Mem{NUM1+NUM2}=?

14. describe the procedure for setting flag bits using ADDITION and SUBTRACTION:

15. For each of the following, given the X16 instructions, contents of R0 and contents of R1, what will be the resultant value in R0 and how will Z,N,C, and V be set?

a)	RO=-7,	R1=3,	SUBH R1, R0
b)	RO=-7,	R1=3,	ADDH R1, R0
c)	RO= 7FFEh,	R1=1,	ADDH R1, R0
d)	RO= 7FFEh,	R1=2,	ADDH R1, R0
e)	RO=-7001h,	R1=7001h,	ADDH R1, R0
f)	RO=-7001h,	R1=7001h,	SUBH R1, R0
g)	RO=-3,	R1=-7,	ADDH R1, R0

**ASSEMBLY LANGUAGE PROGRAMMING CS3200 TEST 1 PRACTISE EXAM**  
e-mail: vman@newsguy.com

**16. Branch and Compare Instructions**

**Given**

```
stack    dh    8
a        dh    (8100h)
b        dh    (0101h)
c        dh    (0100h)
```

*How are the PSW bits set after the execution of the following instructions*

```
cmph a,b
cmph b,a
cmph b,c
cmph c,b
```

**17. Branch and Compare Instructions (cont)**

**Given**

```
stack    dh    10h
a        dh    (25)
b        dh    (23)
c        dh    (23h)
```

*What are the results of the following instructions*

```
cmph a,b
breq label
cmph a,c
brng label1

cmph c,a
brng label1
```

**18. Write a short code segment to implement the following higher level language statement:**

```
If A=B
then { c=5 }
else { c=-5 }
```

**ASSEMBLY LANGUAGE PROGRAMMING CS3200 TEST 1 PRACTISE EXAM**  
e-mail: vman@newsguy.com

19. Write a short code segment to implement the following higher level language statement:

```
while I<10 do { A[I]=B[I]}
```

20. Subroutine Instructions, Given

```
R0-R5 are all zero
stack      dh   10h
a          dh   (1)
b          dh   (2)
```

Trace the code fragment below indicating what each step does, and what happens to any and all registers:

```
addh a,b
Call fudgeit
movh r0,saveit
```

```
fudgeit  movh b,r0
         addh #1,r0
         retn
```

21. How many address spaces are there in X16 ( and in most computers)?

**ASSEMBLY LANGUAGE PROGRAMMING CS3200 TEST 1 PRACTISE EXAM**  
e-mail: vman@newsguy.com

22. What is address 3 in RAM? How about in the register file?

23. What is address 3CFh in RAM? How about in the register file?

24. What is A+B in the instruction

```
mulh    A+B,r4
```

25. From question (24)

- a. if A=10h, what is Mem{A}?
- b. if B=14h, what is Mem{B}?
- c. whats Reg{R4}?

26. Addressing, what are the equivalent conceptual instructions for each of the following lines of code?

```
addh b,a
iorb a+1,b
mulh a+2,r4
subb 3[r4],[r4]
movb b[r4],a+1[r4]
```

**ASSEMBLY LANGUAGE PROGRAMMING CS3200 TEST 1 PRACTISE EXAM**  
e-mail: vman@newsguy.com

27. **Given**

<b>Address</b>	<b>Contents</b>
0180h	1
0181h	2
0182h	80h
0183h	01h

  

r3	contains	181h
r2	contains	0h
r1	contains	3210h
r0	contains	ffffh

  

x	location	180h
y	location	182h

***How does the following sequence of instructions effect memory and registers?***

***What type of address does each represent?***

```
movb #12h,r0
movb r3,r0
movh x,r0
movb [r3],r0
```

28. **Given the following storage definitions:**

```
Arraysize dh (6)
Array dh (35,75,23,5,-3,15)
Sum dh 1h
```

Write a code segment to implement the following

```
Sum=0
```

```
For I=1 to arraysize do {
    Sum = sum + array[I]}
```

# ASSEMBLY LANGUAGE PROGRAMMING CS3200 TEST 1 PRACTISE EXAM

e-mail: vman@newsguy.com

29. Given an Array of characters and a number:

```
Array    db    ( '-1234' )  
Number   dh    ( 0 )
```

*Using a for/do loop construct, write a code segment to convert array into a signed integer. Place the signed integer into the memory location number.*