# Discussion 1

(1) Given a 8 bit pattern 0001 1101, what is the decimal value if it is represented in

1. 8-bit unsigned number representation
2. 8 bit 2’s complement representation
3. BCD code

(2) Given a 8 bit pattern 1001 1001, what is the decimal value if it is represented in

1. 8-bit unsigned number representation
2. 8 bit 2’s complement representation
3. BCD code

x

(4) Given two decimal numbers, A=-127 and B=-64,

a. Convert A and B into the 8-bit 2’s complement system format.

b. Perform A+B in the 8-bit 2’s complement system format domain.

Comments your results.

(5) Add the following hex values.

(a) 2CH + 3FH (b) F34H + 5D6H

**(6) Below are listed several computers with their data bus widths. For each computer,**

**list the maximum value that can be brought into the CPU at a time (in both hex and**

**decimal).**

(a) Apple 2 with an 8-bit data bus

(b) IBM PC with a 16-bit data bus

(c) IBM PC with a 32-bit data bus

**(7) Find the total amount of memory, in the units requested, for each of the following**

**CPUs, given the size of the address buses.**

(a) 16-bit address bus (in K)

(b) 24-bit address bus (in megabytes)

(c) 32-bit address bus (in megabytes and gigabytes)

(8) Regarding the data bus and address bus, which is unidirectional and which is

bidirectional?

(9) Which register of the CPU holds the address of the instruction to be fetched?

(10) Which section of the CPU is responsible for performing addition?

1. List the three bus types present in every CPU.
2. **Which register of the CPU holds the data for Arithmetic and Logic operations?**