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| Instructor |  | Due Date |  |

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| Part | **1** | **2** | **3** | **4** | Total |
| *Maximum Points* | **25** points | **25** points | **25** points | **25** points | **100**G101010 pointsG |
| ***Your Score*** |  |  |  |  |  |

**Textbook Reading Assignment**

Thoroughly read Chapter(s) 4 in your Computer Architecture and Organization textbook.

**Part 1 Glossary Terms - Computer Hardware Specifications**

Define, in detail, each of these glossary terms from the realm of computer architecture and computer topics, in general. If applicable, use examples to support your definitions. Consult your notes

or course textbook(s) as references or the Internet by visiting Web sites such as:

[**http://www.ask.com**](http://www.ask.com) or [**http://www.webopedia.com**](http://www.webopedia.com/)

**(a) ALU ( Arithmetic Logic Unit )**

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**(b) Assemblers**

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**(c) Buses**

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**(d) Clocks**

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**(e) Control Unit**

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**Part 2 Exercises - Computer Hardware Specifications**

For each of the following, select the correct answer.

**(1)** Suppose the RAM for a certain computer has 256M words, where each word is 16 bits long. What is the capacity of this memory expressed in bytes?

(a) 2 30 (b) 2 29 (c) 2 20 (d) 2 27 (e) 2 10

**(2)** A flip - flop circuit is also known as a(n) \_\_\_\_\_\_\_\_\_\_ .

(a) Eccles - Jordan switch (b) unlatching relay

(c) mercury switch (d) uni - polar switch

**(3)** Modern computer clock speeds are measured in \_\_\_\_\_\_\_\_\_\_ .

(a) gigabytes (b) millions of pulses per second

(c) millions of pulses per minute (d) billions of pulses per second

**(4)** Assemblers and compilers usually translate a source program into machine instructions contained in what type of file?

(a) include file (b) binary file

(c) object module (d) hidden file

**(5)** A register is a(n) \_\_\_\_\_\_\_\_\_\_ .

(a) a part of the processor that performs an operation

(b) a part of the processor that keeps a log of operations

(c) the part of the operating system that oversees what programs are selected for execution

(d) a part of the processor that holds a bit pattern

**Part 3 Exercises - Computer Hardware Specifications**

Mix and Match

Match the definition on the left with the most appropriate definition on the right.

**(1)** \_\_\_\_\_ fetch, decode (a) assists in improving interoperability

**(2)** \_\_\_\_\_ computer architecture (b) the physical aspects of a computer system

**(3)** \_\_\_\_\_ PCI (c) the brain of the computer

**(4)** \_\_\_\_\_ RAM (d) the logical aspects of a computer system

**(5)** \_\_\_\_\_ bus (e) commands the CPU is designed to understand

**(6)** \_\_\_\_\_ clock speed (f) tasks performed by the control unit in the CPU

**(7)** \_\_\_\_\_ CPU (g) measured in cycles per second

**(8)** \_\_\_\_\_ computer organization (h) allows the flow of data and program instructions

**(9)** \_\_\_\_\_ instruction set (i) slots near the CPU to connect other devices

**(10)** \_\_\_\_\_ hardware standards (j) an important consideration when buying a computer

**Part 4 Exercises - Computer Hardware Specifications**

Write a complete answer for each of these.

**(1)** What are the main functions of the CPU?

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**(2)** How is the ALU related to the CPU ? What are its main functions?

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**(3)** Explain what the CPU should do when an interrupt occurs. Include in your answer the method the CPU uses to detect an interrupt, how it is handled, and what happens when the interrupt has been serviced.

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**(4)** A digital computer has a memory unit with 24 bits per word. The instruction set consists of 150 different operations. All instructions have an operation code part ( opcode ) and an address part ( allowing for only one address ) . Each instruction is stored in one word of memory.

(a) How many bits are needed for the opcode?

(b) How many bits are left for the address part of the instruction?

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