**Microprocessor Basics**

**Quiz Key**

1. Which of the following is used to illustrate the output for all possible combinations of inputs?
   * + 1. NAND gate
       2. Boolean equation
       3. Timing diagram
       4. **Truth table**
2. What can be used to mathematically illustrate the functional operation of a logic gate?
   * + 1. Logic probe
       2. **Boolean equation**
       3. Truth table
       4. Timing diagram
3. What are the major subsections of a CPU?
   1. MPU and ROM
   2. VLSI and ASIC
   3. **ALU and control unit**
   4. EEPROM and volatile RAM
4. What is the main thing the microprocessor does?
   * 1. Multi-processing
     2. Calculations on data
     3. **Executes instructions**
     4. Memory fetch operations
5. In a computer, an instruction cycle is followed by a/an:
   1. Analog cycle
   2. Digital cycle
   3. **Execution cycle**
   4. Acknowledgement
6. Which bus signal is used to synchronize all microprocessor operations?
   1. The Read/Write signal
   2. **The System Clock signal**
   3. The Interrupt Request signal
   4. The DMA Request signal
7. What type of operation is performed when a data word is placed into memory?
   1. **A Write operation**
   2. A Read operation
   3. A Fetch operation
   4. An interrupt operation
8. What determines where a data word will be stored in a memory unit?
   1. **Its address**
   2. Its size
   3. Its type
   4. Its function
9. What type of gate performs the carry out function of an adder?
   1. An inverter
   2. An OR gate
   3. **An AND Gate**
   4. An Exclusive-OR
10. Instructions are processed:
    1. As a group
    2. **Sequentially**
    3. Randomly
    4. Only when the user provides input
11. List three types of buses.

**Address, Data, Control, (power)**

1. List three of the basic parts to a computer.

**Input unit, Output Unit. Memory, CPU**

1. What is a computer “bus” system?

**A group of wires that all perform a common function**

**A group of wires that go everywhere and connect everything together**

. List 3 examples of control signals.

**Clock, enable/disable, read/write, interrupt, ready to send/clear to send**

1. How many bits in a byte? **8**
2. Give the truth table for two input (A and B) addition.

|  |  |  |  |
| --- | --- | --- | --- |
| **A** | **B** | **Σ** | **C** |
| **0** | **0** | **0** | **0** |
| **0** | **1** | **1** | **0** |
| **1** | **0** | **1** | **0** |
| **1** | **1** | **0** | **1** |

17. What does the phrase “totem pole” in a circuit mean?

**A two transistor circuit where each transistor has an opposite state.**

**(When one transistor is on the other is off and vice versa)**

**Used to produce output voltages that are closer to ideal.**

18. What are the two things a clock signal does?

**Triggers the start of an instruction cycle.**

**Defines the duration of the instruction cycle.**

19. What does a decoder circuit do?

**Uses logic gates to turn on a single output from a particular binary number (code)Input.**

20. Describe the relationship between the program counter and the stack.

**The program counter holds the address of the next instruction to be executed. The stack holds the addresses of other programs and data that are not currently being used but have been used at other times and may be called for use again. Addresses from the stack and the program counter go back and forth as needed.**