Computer Organization Test

**Architecture**

2.1.1 Outline the architecture of the central processing unit (CPU) and the functions of the arithmetic logic unit (ALU) and the control unit (CU) and the registers within the CPU.

1. Draw a diagram of a CPU include the Control Unit(CU), Arithmetic Logic Unit(ALU), Memory Address Register(MAR), Memory Buffer Register (MBR), Control Bus, Address Bus, Data Bus, and Memory, then describe each devices role within the CPU.

2.1.2 Describe primary memory.

1. Compare and contrast RAM and ROM.

2.1.3 Explain the use of cache memory.

1. Explain the use of cache memory.

2.1.4 Explain the machine instruction cycle.

1. Explain the machine instruction cycle.

**Operating Systems**

2.1.6 Describe the main functions of an operating system.

1. Describe the main functions of an operating system.

**Binary Representation**

2.1.9 Define the terms: bit, byte, binary, denary/decimal, hexadecimal.

1. Define the terms bit and byte.

2.1.10 Outline the way in which data is represented in the computer.

1. Suppose a computer has a 16 bit (2 byte) system, how would the number 10 be represented?
2. Suppose a computer has a 16 bit (2 byte) system, how would the number - 6 be represented using two’s complement format?

**Logic Gates**

2.1.12 Construct truth tables using the above operators.

1. Construct a truth table for the following Boolean expression then select the option that best describes the output of the expression.

(A AND B) OR B

is true

1. whenever A is true.
2. whenever B is true.
3. whenever either A is true or B is true.
4. whenever both A is true and B is true.
5. in all cases
6. Construct a truth table for the following Boolean expression then select the option that best describes the output of the expression.

(A NAND B) AND (A XOR B)

evaluates to

1. true in all cases.
2. false in all cases.
3. true, whenever both A is true and B is true.
4. true, whenever either A is true or B is true.
5. false only, whenever either A is true of B is true.
6. Construct a logic diagram for the following scenario: Joe will play the violin or the viola in the school orchestra and have Mrs. Thompson as a teacher.
7. Construct a logic diagram for the following scenario: Brenda will plant watermelon and either tomatoes or carrots in her new vegetable garden.