Title: **Binary, Octal and Hexadecimal Conversion** Worksheet: 8

Course: Introduction to Automation Unit: Introduction to PLC CLO: 4

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall calculate a hexadecimal value to decimal and vise-versa.
2. Student shall calculate a hexadecimal value to binary and vise-versa.
3. Student shall calculate an octal value to decimal and vise-versa.
4. Student shall calculate an octal value to binary and vise-versa.

**Assessment**

Students shall demonstrate a comprehension of the objectives listed above by scoring a minimum of 75% on this Worksheet. Grading shall be based on the answer key.

**Instructions**

Convert the following hexadecimal numbers to their decimal equivalents.

1. 3116 \_\_\_\_\_\_10
2. 1016 \_\_\_\_\_\_10
3. 4B16 \_\_\_\_\_\_10
4. 1E216 \_\_\_\_\_\_10
5. D416 \_\_\_\_\_\_10
6. 11116 \_\_\_\_\_\_10
7. 916 \_\_\_\_\_\_10
8. 1C16 \_\_\_\_\_\_10
9. B116 \_\_\_\_\_\_10
10. 2F16 \_\_\_\_\_\_10

**Instructions**

Convert the following decimal numbers to their hexadecimal equivalents.

1. 3110 \_\_\_\_\_\_16
2. 1010 \_\_\_\_\_\_16
3. 5910 \_\_\_\_\_\_16
4. 510 \_\_\_\_\_\_16
5. 11410 \_\_\_\_\_\_16
6. 1610 \_\_\_\_\_\_16
7. 7110 \_\_\_\_\_\_16
8. 1910 \_\_\_\_\_\_16
9. 9910 \_\_\_\_\_\_16
10. 25610 \_\_\_\_\_\_16

**Instructions**

Convert the following binary numbers to their hexadecimal equivalents.

1. 101110012 \_\_\_\_\_\_16
2. 010110112 \_\_\_\_\_\_16
3. 100111012 \_\_\_\_\_\_16
4. 110110012 \_\_\_\_\_\_16
5. 111111102 \_\_\_\_\_\_16
6. 100100012 \_\_\_\_\_\_16
7. 101010102 \_\_\_\_\_\_16
8. 110011002 \_\_\_\_\_\_16
9. 101001012 \_\_\_\_\_\_16
10. 110111012 \_\_\_\_\_\_16

**Instructions**

Convert the following hexadecimal numbers to their binary equivalents.

1. 4E2616 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
2. 1CD216 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
3. 511B16 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
4. AAF416 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
5. D0D016 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
6. 100116 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
7. FADE16 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
8. 1F1F16 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
9. 567816 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
10. CDEF16 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2

**Instructions**

Convert the following octal numbers to their decimal equivalents.

1. 318 \_\_\_\_10
2. 108 \_\_\_\_10
3. 538 \_\_\_\_10
4. 78 \_\_\_\_10
5. 1278 \_\_\_\_10
6. 178 \_\_\_\_10
7. 668 \_\_\_\_10
8. 118 \_\_\_\_10
9. 1118 \_\_\_\_10
10. 1218 \_\_\_\_10

**Instructions**

Convert the following decimal numbers to their octal equivalents.

1. 3110 \_\_\_\_8
2. 1010 \_\_\_\_8
3. 5310 \_\_\_\_8
4. 710 \_\_\_\_8
5. 11510 \_\_\_\_8
6. 1710 \_\_\_\_8
7. 9910 \_\_\_\_8
8. 1010 \_\_\_\_8
9. 20210 \_\_\_\_8
10. 11110 \_\_\_\_8

**Instructions**

Convert the following binary numbers to their octal equivalents.

1. 101110012 \_\_\_\_8
2. 010110112 \_\_\_\_8
3. 101011012 \_\_\_\_8
4. 111010012 \_\_\_\_8
5. 101111112 \_\_\_\_8
6. 100100012 \_\_\_\_8
7. 110101012 \_\_\_\_8
8. 101010112 \_\_\_\_8
9. 101101012 \_\_\_\_8
10. 110101002 \_\_\_\_8

**Instructions**

Convert the following octal numbers to their binary equivalents.

1. 318 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
2. 108 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
3. 538 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
4. 78 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
5. 1148 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
6. 178 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
7. 728 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
8. 118 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
9. 1118 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2
10. 2228 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2