**Faculty of Physics-Mathematics and Computer Sciences**

**Discrete Mathematics 2016-2017**

**Pre - test**

1. Suppose we have two large integers, say 640 and 420. Find their greatest common divisor? **(1 point)**
2. Suppose that  is defined recursively by  and that . Find  and. **(1 point)**
3. Suppose . Determine if each statement is true or false? **(1 point)**



1. Let  be defined by  and let . Evaluate g(A). **(1 point)**
2. How many functions are there from  to. **(1 point)**
3. Let  and  , find  and ? **(1 point)**
4. How many integers from 1 through 1,000 are multiples of 4 or multiples of 7? **(1 point)**
5. A password consists of 4 digits (each digit can be 0 through 9). How many such passwords have at least one digit repeated? **(1 point)**

**Post – test**

1. Suppose we have two large integers, say 9081 and 3270. Find their greatest common divisor?**(1 point)**
2. Suppose that  is defined recursively by  and that . Find .**(1 point)**
3. Suppose . Determine if each statement is true or false? **(1 point)**



1. Let  be defined by  and let . Evaluate g(A). **(1 point)**
2. How many functions are there from {1,2,3} to {a,b}.**(1 point)**
3. Let f(x) = 3x-5 and g(x) = x2 -6, find ( f o g)(x) and ( g o f)(x)? **(1 point)**
4. How many integers from 1 through 1,000 are multiples of 4 or multiples of 7? **(1 point)**
5. A password consists of 4 digits (each digit can be 0 through 9). How many such passwords have at least one digit repeated? **(1 point)**

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|  | **Pre - test** | | | | | | | |  | **Post – test** | | | | | | | |
| N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |  | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
|  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
|  | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |  | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |  | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
|  | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
|  | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |  | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
|  | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |  | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
|  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|  | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |  | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
|  | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
|  | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |  | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |  | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
|  | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |  | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |