Coding Test - No.1

Name: __________________

1 - Which of the following time complexity means constant time?
   A. O(N)  B. O(NLogN)  C. O(1)  D. O(N^2)

2 - Which of the following is a Binary Tree?
   A.  1--2--3   B.  1---2 3   C.  1<--2-->3   D.  1---2----3

3 - Which of the following is a Binary Search Tree?

4 - Which of the following order for a Binary Search Tree gives an ordered sequence?
   A. Preorder   B. Postorder   C. Inorder   D. level-by-level

5 - Can you complete the following code to compute the Fibonacci Numbers?

```python
@_____
def fib(n):
    if n == 0 or n == 1:
        return n
    return ________ + _________
```

6 - If we have the linked list of two nodes A→ B and we want to insert C before B, could you complete the code?

```python
A.next = C
_____ = B
```

7 - What data structure(s) can we use to implement a BFS algorithm?
   A - list   B - deque   C - set   D - hash table   E - Linked List
8 - What is the time complexity to sort a list of N numbers using the inbuilt sort() function?
A - O(N)  B - O(N^2)  C - O(LogN)  D - O(NLogN)

9 - If array A is [1, 2, 2, 3, 3, 0], B = Counter(A), fill the content of B:

B = {
    __________________
    __________________
    __________________
    __________________
}

10 - The Pell numbers is defined as following, could you find the value of \text{pell}(5)

@cache
def pell(n):
    if n == 0:
        return 0
    if n == 1:
        return 1
    return 2*pell(n - 1) + pell(n - 2)