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CSC1001 Final Exam Review

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Best of luck for your final exam! 😊

Single-Choice Questions

There is only one correct answer for each question.

1. Which of the following is NOT a high-level programming language?
    a. Java language
    b. Assembly language
    c. Python
    d. C++ language
2. Binary number 11001101.001 and hexadecimal number 45E.8 equal to decimal numbers:
    a. 205.125 and 1118.5
    b. 205.125 and 1119.5
    c. 153.25 and 1118.5
    d. 153.25 and 1119.5
3. Order the following time complexities from fast to slow:
    I. 2^n
    II. log(n)
    III. nlog(n)
    IV. n^3
    V. n
    VI. n^2
    a. I, II, III, IV, V, VI
    b. V, II, III, I VI, IV
    c. III, II, V, VI, IV, I
    d. II, V, III, VI, IV, I
4. Concerning the following program, which of the following statements is incorrect?

```
if x<10:
    print('Below 10')
elif x<15:
    print('Below 15')
elif x<7:
    print('Below 7')
else:
    print('Something')
print('Done')
```

    a. print('Below 10') will be executed when x = 8.
    b. print('Below 7') will be executed when x = 1.

c. print('Below 15') will be executed when x = 12.
d. print('Something') will be executed when x = 20.

Multiple-Choice Questions

There may be more than one answers for each question.

5. Which of the following is/are the python reserved word?
    a. True
    b. del
    c. assertation
    d. break
6. Which of the following is/are a legal variable name/s?
    a. Myvar
    b. _myvar
    c. My_var
    d. My-var
7. Concerning algorithm analysis, which of the following statement/s is/are correct?
    a. Function $5n^4 + 6n^3 + 2n\log(n) + 2n + 2$ is $O(n\log(n))$.
    b. The big-Oh notation allows us to say that a function f(n) is less than or equal to another function g(n) up to a constant factor when n is large enough.
    c. When we analyze an algorithm, we are usually interested at its average performance regardless of the input size.
    d. The big-Oh notation can be used to characterize the running time of an algorithm in the asymptotic sense.

Open Questions

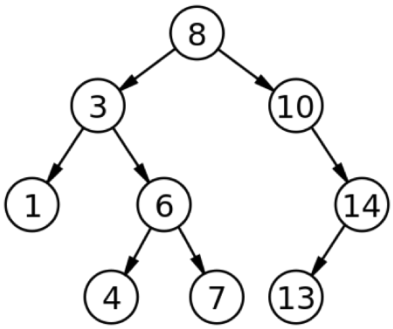
Read the following programs and answer the corresponding questions.

8. Concerning the following program, and assume that input *t* will be a reference pointing to the root of a binary tree.

```
def Search(t):
    if t:
        print(t.element)
    if (t.left is None) and (t.right is None):
        return
    else:
        if t.right is not None:
            Search(t.right)
        if t.left is not None:
            Search(t.left)
```

    a. Which algorithm is implemented in this function?

b. If input *t* is referencing to the root of the following tree, what would be the output of this function?



Reference: compiled from several past papers with modification

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ANSWERS

1. B
2. A
3. D
4. B
5. ABD
6. ABC
7. BD
8. a. Depth-first search (DFS)
   b. 8
      3
      1
      6
      4
      7
      10
      14
      13