Status	Finished
Started	Friday, 7 November 2025, 2:20 PM
Completed	Friday, 7 November 2025, 3:10 PM
Duration	50 mins
Grade	**68.00** out of 100.00

Question **1**

Correct

Mark 6.00 out of 6.00

What is the time complexity of this Java code?

```
for(int i = 0; i < n; i++) {
   for(int j = 0; j < i; j= j * 2) {
      System.out.println(i + j);
   }
}
```

a. $O(n^2)$

b. $O(n \log n)$ ✓

c. $O(n^3)$

d. $O(n)$

e. None of the above

The correct answers are: $O(n \log n)$, None of the above

Question **2**

Correct

Mark 4.00 out of 4.00

A Java recursive function my_print() is shown below. What is the output of executing my_print(3)?

```
void my_print(int n){
  if(n<=0) return;
  my_print(n-1);
   System.out.print(n + " ");
}
```

- a. 3 2 1
- b. 0
- c. Stack Overflow
- d. 3 2 1 0
- e. 0 1 2 3
- f. 1 2 3 ✓
- g. Compilation error
- h. 0 1 2

The correct answer is: 1 2 3

Question **3**

Incorrect

Mark 0.00 out of 4.00

In a sorted array of integers, of size n, what is the time complexity of finding the median value?

(The median is the value that divides the array so that 50% of the numbers are below it and 50% are above it.)

HINT: if the array is sorted, the median is the value at the middle index...

- a. O(n log n)
- b. O(n)
- c. O(n/2) ✗
- d. O(1)
- e. O(n^2)

The correct answer is: O(1)

Question **4**

Incorrect

Mark 0.00 out of 5.00

Which of the following is a valid base case for a recursive factorial method?

a. if(n == 1) return n;

b. if (n==1) return 1;

c. if(n == 0) return 0;

d. if(n > 0) return n;

e. if (n==0) return 1;

f. None of the answers is correct ⊗

g. if(n < 0) return 1;

The correct answers are: if(n < 0) return 1;, if (n==0) return 1;, if (n==1) return 1;

Question **5**

Correct

Mark 6.00 out of 6.00

Given this Java code:

```
int[][] a = { {1,2,3}, {4,5,6} };
System.out.println(a[1][2]);
```

What will be printed?

a. 6 ✓

b. None of the above

c. 3

d. 2,6

e. 2

The correct answer is: 6

Question **6**

Correct

Mark 6.00 out of 6.00

What is the complexity of this Java code

```
k=20;
for(int i = 0; i < n; i++) {
   for(int j = 0; j < k; j++) {
      System.out.println(j);
   }
}
```

- a. O(kn)
- b. O(n) ✓
- c. $O(n^2)$

The correct answer is: O(n)

Question **7**

Correct

Mark 4.00 out of 4.00

What is the time complexity (in Big O notation) of merging two sorted arrays into a single sorted array? Suppose that **n** is the total number of elements in both arrays.

- a. O(n logn) , it is Mergesort
- b. O(n) ✓
- c. O(log n)
- d. O(n^2)
- e. O(1)

The correct answer is: O(n)

Question **8**

Correct

Mark 6.00 out of 6.00

What is the time complexity of an algorithm to find the mean value of an array of integers?

- a. O(1)
- b. O(log n)
- c. O(n^2)
- d. None of the answers is correct
- e. O(n) ✓

The correct answer is: O(n)

Question **9**

Incorrect

Mark 0.00 out of 7.00

Consider this recursive function:

```
public static int mystery(String str) {
   if (str.equals("")) {
      return 0;
   } else {
       return 1 + mystery(str.substring(1));
   }
}
```

what is the output of: mystery("hello!");

- a. 6
- b. None of these answers is correct
- c. 5
- d. 1
- e. !olleh
- f. 3
- g. hello!
- h. Error ✗

The correct answer is: 6

Question **10**

Incorrect

Mark 0.00 out of 5.00

Which of the following statements is **true**?

a. Merge Sort has better average performance than Quick Sort

b. Merge Sort is in-place, Quick Sort is not

c. Merge Sort and Quick Sort both require the same space in memory ⊗

d. None of the answers is true

e. Merge Sort requires extra memory; Quick Sort does not

The correct answer is: Merge Sort requires extra memory; Quick Sort does not

Question **11**

Incorrect

Mark 0.00 out of 4.00

On average, how many comparisons are needed to find a number in an unsorted array using binary search?

a. n log n

b. None of the answers is correct

c. n/2

d. n ⊗

e. log n

The correct answer is: None of the answers is correct

Question **12**

Correct

Mark 7.00 out of 7.00

In order to be executed, Algorithm 1 takes a number of steps equal to $\mathbf{3n^2+1000n+13}$

Algorithm 2 takes a number of steps equal to $\mathbf{9n^2+2}$

Which algorithm has the higher complexity class (in Big-O notation terms)?

a. Not enough information to answer

b. Algorithm 2

c. Depends on n

d. Same complexity ✓

e. Algorithm 1

The correct answer is: Same complexity

Question **13**

Correct

Mark 5.00 out of 5.00

What is the lowest complexity between...

a. O(log n)

b. O(10000) ✓

c. O(2n)

d. O(n!)

e. O(sqrt(n))

The correct answer is: O(10000)

Question **14**

Correct

Mark 6.00 out of 6.00

Which of the following statements about Bubble Sort is true?

- a. It uses divide and conquer to sort.
- b. It is unstable.
- c. It always sorts in O(n log n) time.
- d. It repeatedly swaps adjacent elements if they are in the wrong order. ✓

The correct answer is: It repeatedly swaps adjacent elements if they are in the wrong order.

Question **15**

Correct

Mark 6.00 out of 6.00

Algorithm A has a complexity of O(n)

Algorithm B has a complexity of O(4n)

What is the complexity of running Algorithm A and then Algorithm B in sequence?

- a. $O(5n^2)$
- b. Impossible to compute
- c. O(n) ✓
- d. O(5n)
- e. $O(n^2)$

The correct answer is: O(n)

Question **16**

Correct

Mark 6.00 out of 6.00

What is the number of comparisons needed to find the maximum element in an array of size n?

a. n^2

b. n/2

c. n-1 ✓

d. 1

The correct answer is: n-1

Question **17**

Correct

Mark 6.00 out of 6.00

What is this code used for?

```
int key = 5
int i;
for (i = n - 1; (i >= 0 && arr[i] > key); i--) {
        arr[i + 1] = arr[i];
}
arr[i + 1] = key;
```

a. Merge two arrays

b. Add the value of the variable key in the 5th position

c. Add the value of the variable key in the right position in a sorted array ✓

d. Search for the value key in the array

e. It is the partitioning function of Quicksort, key is the pivot

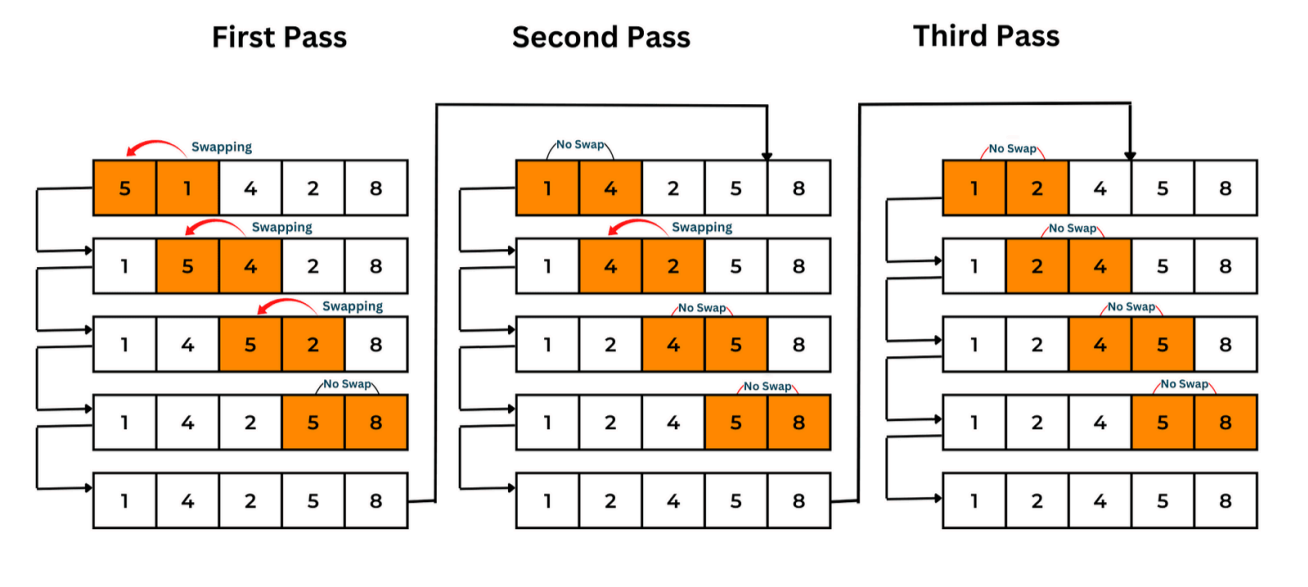
The correct answer is: Add the value of the variable key in the right position in a sorted array

Question **18**

Incorrect

Mark 0.00 out of 7.00

Can you recognize this sorting algorithm?



a. Bubble Sort

b. Swap Sort ⊗

c. MergeSort

d. QuickSort

e. Selection Sort

The correct answer is: Bubble Sort