Started on	Friday, 21 June 2024, 1:58 AM
State	Finished
Completed on	Friday, 21 June 2024, 1:58 AM
Time taken	9 secs
Marks	0.00/11.00
Grade	**0.00** out of 100.00

Question 1

Not answered

Marked out of 1.00

True/False: Is $2^{(n+1)} = O\left(2^n\right)$?

Select one:

- True
- False

The correct answer is 'False'.

Question 2

Not answered

Marked out of 1.00

$3^n + 12$

Select one:

a. $\Theta(3^n)$

b. $\Omega(3^n)$

c. $O(2^n)$

d. $O(3^n)$

The correct answer is: $\Theta(3^n)$

Question 3

Not answered

Marked out of 1.00

What is the Asymptotic complexity of a binary search given the code below and the following recursion equation:

$$T(n) = T\left(\frac{n}{2}\right) + 1$$

```
// initially called with low = 0, high = N - 1
BinarySearch_Right(A[0..N-1], value, low, high) {
    // invariants: value >= A[i] for all i < low
                   value < A[i] for all i > high
    if (high < low)
        return low
    mid = (low + high) / 2
    if (A[mid] > value)
        return BinarySearch_Right(A, value, low, mid-1)
    else
        return BinarySearch_Right(A, value, mid+1, high)
}
```

Select one:

- a. $\Theta(lg \cdot n)$
- b. $O(n^2)$
- c. $\emptyset(lg \cdot n)$
- d. $\Omega(lg \cdot n)$

$\Theta(lg \cdot n)$

The correct answer is: $\Theta(lg \cdot n)$

Question 4

Not answered

Marked out of 1.00

Given the following algorithm, what is the number of fundamental instructions that this routine will execute if the value of n is 4?

```
var M = A[ 0 ];
for ( var i = 0; i < n; ++i ) {
   if ( A[ i ] >= M ) {
      M = A[ i ];
   }
}
```

Select one:

- a. 4+2n
- b. 10
- c. n^2
- d. 2n+2

The correct answer is: 4+2n

Question 5

Not answered

Marked out of 1.00

True/False: A Boolean variable can take on only 1 value.

Select one:

- True
- False

The correct answer is 'False'.

Question 6

Not answered

Marked out of 1.00

Which of the following is NOT a property of logarithms?

Select one:

- a. log(nm) = log n + log m
- b. log(n/m) = log n - log m
- c. $\log(n^r) = r log n$
- d. $log_b n = log_n b \; log_a b$

The correct answer is: $log_b n = log_n b \; log_a b$

Question 7

Not answered

Marked out of 1.00

True/False: An algorithm is a well-defined sequence of steps used to solve a well-defined problem in finite time.

Select one:

- True
- False

The correct answer is 'True'.

Question 8

Not answered

Marked out of 1.00

True/False: The running time of an algorithm is the number of instructions it executes when run on a particular instance.

Select one:

- True
- False

The correct answer is 'True'.

Question 9

Not answered

Marked out of 1.00

True/False: An algorithm is a well-defined sequence of steps used to solve a well-defined problem in an infinite number of steps.

Select one:

- True
- False

The correct answer is 'False'.

Question 10

Not answered

Marked out of 1.00

True/False: The backtracking algorithm treats the solution space as a graph and follows a path to conclusion to find a solution to a problem. The algorithm may 'backtrack' by reversing up to previous branches in a tree and try all branches to find the solution.

Select one:

- True
- False

The correct answer is 'True'.

Question 11

Not answered

Marked out of 1.00

The Backtracking algorithm implements the following search?

Select one:

- a. Depth First Search
- b. Sequential search
- c. Breadth First Search
- d. Binary Search

The correct answer is: Depth First Search