Assignment 1

The due date for submitting this assignment has passed. Due on 2016-09-18, 05:30 IST.

As per our records you have not submitted this assignment.

1) The solution of the recurrence: $T(n) = 2T(n/3) + \log n$ by given $\Theta$ - notation bound is $\Theta(\log n)$ $\Theta(n^2)$ $\Theta(n)$ $\Theta(n^2 \log n)$

**No, the answer is incorrect.**
Score: 0
Accepted Answers:
$\Theta(n \log n)$

2) The solution of the recurrence: $T(n) = T(n/2) + T(n/4) + T(n/8) + n$ by given $\Theta$-notation bound is $\Theta(n)$ $\Theta(n^2)$ $\Theta(n \log n)$ $\Theta(n^2 \log n)$

**No, the answer is incorrect.**
Score: 0
Accepted Answers:
$\Theta(n)$

3) The solution of the recurrence $T(n) = \sqrt{n}T(\sqrt{n}) + 100n$ by given-notation bound $\Theta(n \log(\log n))$ $\Theta(n \log n)$ $\Theta(n)$ $\Theta(n^2 \log n)$

**No, the answer is incorrect.**
Score: 0
Accepted Answers:
$\Theta(n \log(\log n))$

4) The solution of the recurrence: $T(n) = T(n-2) + \log n$ by given $\Theta$-notation bound is $\Theta(n)$ $\Theta(n^2)$ $\Theta(n \log n)$
5) The recurrence that describes the worst-case running time of Insertion sort algorithm is:

- \( T(n) = 2T(n/2) + \Theta(nlgn) \)
- \( T(n) = 2T(n/2) + \Theta(n) \)
- \( T(n) = T(n-1) + \Theta(n) \)
- \( T(n) = 2T(n-1) + \Theta(n) \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( \Theta(nlgn) \)

6) Running merge sort on an array of size \( n \) which is already sorted is:

- \( O(n) \)
- \( O(nlgn) \)
- \( O(n^2) \)
- \( O(1) \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( O(nlgn) \)

7) The worst case time complexity of heap sort is:

- \( O(lgn) \)
- \( O(n) \)
- \( O(nlgn) \)
- \( O(n^2) \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( O(nlgn) \)

8) Sort the functions in increasing order of asymptotic(big-O) complexity:

- \( F1(n) = n^{\sqrt{n}} \)
- \( F2(n) = 2^n \)
- \( F3(n) = 2^{n/2} \cdot n^{10} \)

- 1, 2, 3
- 3, 2, 1
- 1, 3, 2
- 3, 1, 2

No, the answer is incorrect.
Score: 0
Accepted Answers:
1, 3, 2

9) In an array \( A[1..n] \) of \( n \) distinct elements, if \( i < j \) and \( A[i] > A[j] \), then the pair \((i, j)\) is called an inversion of \( A \).

How many inversions are there in the array \( A = \{n, n-1, n-2, ..., 3, 2, 1\} \)?

- \( n(n+1)/2 \)
- \( n^2 \)
In an array A[1..n] of n distinct elements, if i < j and A[i] > A[j], then the pair (i,j) is called an inversion of A.

How many inversions are there in the array A = {1,2,3,4,...,n}?

- 0
- n(n+1)/2
- n
- (n-1)n/2

No, the answer is incorrect.
Score: 0
Accepted Answers: 

1 point.