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Sistec Science Olympiad

TCS Mock Test

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State	Finished
Completed on	Wednesday, 29 August 2018, 10:33 AM
Time taken	9 secs
Grade	**0.00** out of 48.00 (**0**%)

Question 1

Not answered
Marked out of 1.00
Flag question

Question text

What is the output of the following program

```
main ()
{
unsigned int i;
for (i = 10; i >= 0; i--)
printf ("%d", i);
}
```

Select one:
- a. prints nos 10 - 1
- b. Error
- c. prints numbers 10 - 0
- d. goes into infinite loop

Feedback

Your answer is incorrect.
The correct answer is: prints nos 10 - 1

Question 2

Not answered
Marked out of 1.00
Flag question

Question text

Which of these is an invalid dataname?

Select one:
- a. wd_count
- b. wdcountabcd
- c. wd-count
- d. w4count

Feedback

Your answer is incorrect.
The correct answer is: wd_count

Question 3

Not answered
Marked out of 1.00
Flag question

Question text

What is the value of the following expression?

```
i = 1;
i << 1 % 2
```

Select one:
- a. 0
- b. NA
- c. 2
- d. 1

Feedback

Your answer is incorrect.
The correct answer is: 1

Question 4

Not answered
Marked out of 1.00
Flag question

Question text

What is the value of the following expression?

```
i = 1;
i = (i <<= 1 % 2)
```

Select one:
- a. 0

b. erroneous syntax
c. NA
d. 2

Feedback

Your answer is incorrect.
The correct answer is: 0

Question 5

Not answered
Marked out of 1.00
Flag question

Question text

What is the result?
*A + 1 - *A + 3

Select one:
a. -2
b. 4
c. 0
d. none of the above

Feedback

Your answer is incorrect.
The correct answer is: 4

Question 6

Not answered
Marked out of 1.00
Flag question

Question text

which is the valid declaration?

Select one:
a. typedef struct {int i;} in;
b. #typedef struct { int i;}in;
c. typedef struct in {int i;};
d. #typedef struct int {int i;};

Feedback

Your answer is incorrect.

The correct answer is: #typedef struct int {int i;};

Question 7

Not answered
Marked out of 1.00
Flag question

Question text

```
union
{
int no;
char ch;
}  u;

u.ch = '2';

u.no = 0;
printf ("%d", u.ch);
```

What is the output?

Select one:
- a. 0
- b. none
- c. 2
- d. null character

Feedback

Your answer is incorrect.
The correct answer is: 0

Question 8

Not answered
Marked out of 1.00
Flag question

Question text

which are valid?

i) pointers can be added
ii) pointers can be subtracted
iii) integers can be added to pointers

Select one:
- a. only i and ii
- b. all correct

Feedback

Your answer is incorrect.
The correct answer is: all correct

Question 9

Not answered
Marked out of 1.00
Flag question

Question text

What will be the output of the program?

```
#include<stdio.h>
int main()
{
    char ch;
    if(ch = printf(""))
        printf("It matters\n");
    else
        printf("It doesn't matters\n");
    return 0;
}
```

Select one:

a.

It doesn't matters

b. No output
c. matters
d. It matters

Feedback

Your answer is incorrect.
The correct answer is:

It doesn't matters

Question 10

Not answered
Marked out of 1.00

Flag question

Question text

What is recurrence for worst case of QuickSort and what is the time complexity in Worst case?

Select one:
- a. Recurrence is T(n) = T(n/10) + T(9n/10) + O(n) and time complexity is O(nLogn)
- b. Recurrence is T(n) = 2T(n/2) + O(n) and time complexity is O(nLogn)
- c. Recurrence is T(n) = T(n-2) + O(n) and time complexity is O(n^2)
- d. Recurrence is T(n) = T(n-1) + O(n) and time complexity is O(n^2)

Feedback

Your answer is incorrect.
The correct answer is: Recurrence is T(n) = T(n-1) + O(n) and time complexity is O(n^2)

Question 11

Not answered
Marked out of 1.00
Flag question

Question text

Suppose we have a O(n) time algorithm that finds median of an unsorted array. Now consider a QuickSort implementation where we first find median using the above algorithm, then use median as pivot. What will be the worst case time complexity of this modified QuickSort

Select one:
- a. O(n Logn Logn)
- b. O(nLogn)
- c. O(n^2)
- d. O(n^2 Logn)

Feedback

Your answer is incorrect.
The correct answer is: O(nLogn)

Question 12

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following is not a stable sorting algorithm in its typical implementation

Select one:
- a. Bubble Sort

b. Insertion Sort
c. Merge Sort
d. Quick Sort

Feedback

Your answer is incorrect.
The correct answer is: Quick Sort

Question 13

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following sorting algorithms in its typical implementation gives best performance when applied on an array which is sorted or almost sorted (maximum 1 or two elements are misplaced).

Select one:
a. Quick Sort
b. Heap Sort
c. Insertion Sort
d. Merge Sort

Feedback

Your answer is incorrect.
The correct answer is: Insertion Sort

Question 14

Not answered
Marked out of 1.00
Flag question

Question text

Given an unsorted array. The array has this property that every element in array is at most k distance from its position in sorted array where k is a positive integer smaller than size of array. Which sorting algorithm can be easily modified for sorting this array and what is the obtainable time complexity?

Select one:
a. Quick Sort with time complexity O(kLogk)
b. Heap Sort with time complexity O(nLogk)
c. Insertion Sort with time complexity O(kn)
d. Merge Sort with time complexity O(kLogk)

Feedback

Your answer is incorrect.
The correct answer is: Heap Sort with time complexity O(nLogk)

Question 15

Not answered
Marked out of 1.00
Flag question

Question text

Consider a situation where swap operation is very costly. Which of the following sorting algorithms should be preferred so that the number of swap operations are minimized in general?

Select one:
- a. Selection Sort
- b. Insertion Sort
- c. Merge Sort
- d. Heap Sort

Feedback

Your answer is incorrect.
The correct answer is: Selection Sort

Question 16

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following is not true about comparison based sorting algorithms?

Select one:
- a. Heap Sort is not a comparison based sorting algorithm
- b. Any comparison based sorting algorithm can be made stable by using position as a criteria when two elements are compared
- c. The minimum possible time complexity of a comparison based sorting algorithm is O(nLogn) for a random input array
- d. Counting Sort is not a comparison based sorting algortihm

Feedback

Your answer is incorrect.
The correct answer is: Heap Sort is not a comparison based sorting algorithm

Question 17

Not answered

Marked out of 1.00
Flag question

Question text

Suppose we are sorting an array of eight integers using quicksort, and we have just finished the first partitioning with the array looking like this: 2 5 1 7 9 12 11 10 Which statement is correct?

Select one:
- a. The pivot is not the 7, but it could be the 9
- b. The pivot could be either the 7 or the 9.
- c. Neither the 7 nor the 9 is the pivot.
- d. The pivot could be the 7, but it is not the 9

Feedback

Your answer is incorrect.
The correct answer is: The pivot could be either the 7 or the 9.

Question 18

Not answered
Marked out of 1.00
Flag question

Question text

Suppose we are sorting an array of eight integers using heapsort, and we have just finished some heapify (either maxheapify or minheapify) operations. The array now looks like this: 16 14 15 10 12 27 28 How many heapify operations have been performed on root of heap?

Select one:
- a. 2
- b. 5 or 6
- c. 1
- d. 3 or 4

Feedback

Your answer is incorrect.
The correct answer is: 2

Question 19

Not answered
Marked out of 1.00
Flag question

Question text

What is the best time complexity of bubble sort?

Select one:
- a. N(logN)^2
- b. N^2
- c. N
- d. NlogN

Feedback

Your answer is incorrect.
The correct answer is: N

Question 20

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following algorithms is NOT a divide & conquer algorithm by nature?

Select one:
- a. Heap Sort
- b. Quick Sort
- c. Cooley-Tukey fast Fourier transform
- d. Euclidean algorithm to compute the greatest common divisor

Feedback

Your answer is incorrect.
The correct answer is: Heap Sort

Question 21

Not answered
Marked out of 1.00
Flag question

Question text

Consider the following C program

```
int main()
{
   int x, y, m, n;
   scanf ("%d %d", &x, &y);
   /* x > 0 and y > 0 */
   m = x; n = y;
```

```
   while (m != n)


   {
      if(m>n)
         m = m - n;
      else
         n = n - m;
   }
   printf("%d", n);
}
```

What does the program compute? (TCS CS 2004)

Select one:

- a. x + y using repeated subtraction
- b. the greatest common divisor of x and y
- c. the least common multiple of x and y
- d. x mod y using repeated subtraction

Feedback

Your answer is incorrect.
The correct answer is: the greatest common divisor of x and y

Question 22

Not answered
Marked out of 1.00
Flag question

Question text

Consider the polynomial p(x) = a0 + a1x + a2x^2 +a3x^3, where ai != 0, for all i. The minimum number of multiplications needed to evaluate p on an input x is:

Select one:

- a. 6
- b. 5
- c. 3
- d. 4

Feedback

Your answer is incorrect.
The correct answer is: 3

Question 23

Not answered
Marked out of 1.00
Flag question

Question text

Maximum Subarray Sum problem is to find the subarray with maximum sum. For example, given an array {12, -13, -5, 25, -20, 30, 10}, the maximum subarray sum is 45. The naive solution for this problem is to calculate sum of all subarrays starting with every element and return the maximum of all. We can solve this using Divide and Conquer, what will be the worst case time complexity using Divide and Conquer.

Select one:
- a. O(Logn)
- b. O(n^2)
- c. O(n)
- d. O(nLogn)

Feedback

Your answer is incorrect.
The correct answer is: O(nLogn)

Question 24

Not answered
Marked out of 1.00
Flag question

Question text

Consider a situation where you don't have function to calculate power (pow() function in C) and you need to calculate x^n where x can be any number and n is a positive integer. What can be the best possible time complexity of your power function?
Select one:
- a. O(n)
- b. O(nLogn)
- c. O(LogLogn)
- d. O(Logn)

Feedback

Your answer is incorrect.
The correct answer is: O(Logn)

Question 25

Not answered
Marked out of 1.00
Flag question

Question text

Consider the problem of searching an element x in an array 'arr[]' of size n. The problem can be solved in O(Logn) time if. 1) Array is sorted 2) Array is sorted and rotated by k. k is given to you and k <= n 3) Array is sorted and rotated by k. k is NOT given to you and k <= n 4) Array is not sorted
Select one:

a. 1, 2, 3 and 4
b. 1 Only
c. 1, 2 and 3 only
d. 1 & 2 only

Feedback

Your answer is incorrect.
The correct answer is: 1, 2 and 3 only

Question 26

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following standard algorithms is not a Greedy algorithm?

Select one:
a. Dijkstra's shortest path algorithm
b. Prim's algorithm
c. Bellmen Ford Shortest path algorithm
d. Huffman Coding

Feedback

Your answer is incorrect.
The correct answer is: Bellmen Ford Shortest path algorithm

Question 27

Not answered
Marked out of 1.00
Flag question

Question text

What is the time complexity of Huffman Coding?
Select one:
a. O(N(logN)^2)
b. O(NlogN)
c. O(N^2)
d. O(N)

Feedback

Your answer is incorrect.
The correct answer is: O(NlogN)

Question 28

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following standard algorithms is not Dynamic Programming based.

Select one:
- a. 0-1 Knapsack problem
- b. Prim's Minimum Spanning Tree
- c. Floyd Warshall Algorithm for all pairs shortest paths
- d. Bellman-Ford Algorithm for single source shortest path

Feedback

Your answer is incorrect.
The correct answer is: Prim's Minimum Spanning Tree

Question 29

Not answered
Marked out of 1.00
Flag question

Question text

We use dynamic programming approach when

Select one:
- a. It's faster than Greedy
- b. The solution has optimal substructure
- c. It provides optimal solution
- d. The given problem can be reduced to the 3-SAT problem

Feedback

Your answer is incorrect.
The correct answer is: The solution has optimal substructure

Question 30

Not answered
Marked out of 1.00
Flag question

Question text

Kadane algorithm is used to find:

Select one:
- a. Maximum sum subarray in an array
- b. Maximum product subsequence in an array
- c. Maximum sum subsequence in an array
- d. Maximum product subarray in an array

Feedback

Your answer is incorrect.
The correct answer is: Maximum sum subarray in an array

Question 31

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following is not a backtracking algorithm?

Select one:
- a. Knight tour problem
- b. M coloring problem
- c. Tower of hanoi
- d. N queen problem

Feedback

Your answer is incorrect.
The correct answer is: Tower of hanoi

Question 32

Not answered
Marked out of 1.00
Flag question

Question text

Which one of the following permutations can be obtained the output using stack assuming that the input is the sequence 1,2,3,4,5 in that order ?

Select one:
- a. 1,5,2,3,4
- b. 3,4,5,1,2
- c. 5,4,3,1,2
- d. 3,4,5,2,1

Feedback

Your answer is incorrect.
The correct answer is: 3,4,5,2,1

Question 33

Not answered
Marked out of 1.00
Flag question

Question text

The initial configuration of the queue is a,b,c,d (a is the front end). To get the configuration d,c,b,a one needs a minimum of ?

Select one:
- a. 3 deletions and 4 additions
- b. 3 additions and 2 deletions
- c. 3 deletions and 3 additions
- d. 2 deletions and 3 additions

Feedback

Your answer is incorrect.
The correct answer is: 3 deletions and 3 additions

Question 34

Not answered
Marked out of 1.00
Flag question

Question text

Linked list are not suitable data structure of which one of the following problems ?

Select one:
- a.

Radix sort

- b.

Binary search

- c. Insertion sort
- d. Polynomial manipulation

Feedback

Your answer is incorrect.

The correct answer is:

Binary search

Question 35

Not answered
Marked out of 1.00
Flag question

Question text

The number of possible ordered trees with three nodes A,B,C is?

Select one:
- a. 10
- b. 16
- c. 12
- d. 8

Feedback

Your answer is incorrect.
The correct answer is: 12

Question 36

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following algorithm design technique is used in the quick sort algorithm?

Select one:
- a. Dynamic programming
- b.

Backtracking

- c.

Divide and conquer

- d.

Greedy method

Feedback

Your answer is incorrect.
The correct answer is:

Divide and conquer

Question 37

Not answered
Marked out of 1.00
Flag question

Question text

The number of swapping needed to sort numbers 8,22,7,9,31,19,5,13 in ascending order using bubble sort is ?

Select one:
- a. 13
- b. 14
- c. 12
- d.

11

Feedback

Your answer is incorrect.
The correct answer is: 14

Question 38

Not answered
Marked out of 1.00
Flag question

Question text

Which of the following statement is true ?

Select one:
- a. Optimal binary search tree construction can be performed efficiently using dynamic programming
- b.

Depth first search can be used to find connected components of a graph.

- c.

Breath first search cannot be used to find converted components of a graph.

- d.

Given the prefix and post fix walks over a binary tree.The binary tree cannot be uniquely constructe

Feedback

Your answer is incorrect.

The correct answer is: Optimal binary search tree construction can be performed efficiently using dynamic programming

Question 39

Not answered
Marked out of 1.00
Flag question

Question text

Given two sorted lists of size m and n respectively.The number of comparisons needed in the worst case by the merge sort algorithm will be?

Select one:
a. mn
b.

min(m,n)

c.

max(m,n)

d.

m+n-1

Feedback

Your answer is incorrect.
The correct answer is:

m+n-1

Question 40

Not answered
Marked out of 1.00
Flag question

Question text

C allows

Select one:
a. only call by value and sometimes call by reference
b. both
c. only call by reference
d. only call by value

Feedback

Your answer is incorrect.
The correct answer is: only call by value and sometimes call by reference

Question 41

Not answered
Marked out of 1.00
Flag question

Question text

What will be the output of the program in Turb C (under DOS)?

```
#include<stdio.h>

int main()
{
    int arr[5], i=0;
    while(i<5)
        arr[i]=++i;

    for(i=0; i<5; i++)
        printf("%d, ", arr[i]);

    return 0;
}
```

Select one:
- a. 2, 3, 4, 5, 6,
- b. 0, 1, 2, 3, 4
- c. Garbage value, 1, 2, 3, 4,
- d. 1, 2, 3, 4, 5,

Feedback

Your answer is incorrect.
The correct answer is: Garbage value, 1, 2, 3, 4,

Question 42

Not answered
Marked out of 1.00
Flag question

Question text

What will be the output of the program ?

```
#include<stdio.h>

int main()
{
    int arr[1]={10};
    printf("%d\n", 0[arr]);
    return 0;
}
```

Select one:
- a. 10
- b. 6
- c. 0
- d. 1

Feedback

Your answer is incorrect.
The correct answer is: 10

Question 43

Not answered
Marked out of 1.00
Flag question

Question text

What will be the output of the program if the array begins at address 65486?

```
#include<stdio.h>

int main()
{
    int arr[] = {12, 14, 15, 23, 45};
    printf("%u, %u\n", arr, &arr);
    return 0;
}
```

Select one:
- a. 65486, 65490
- b. 65486, 65486
- c. 65486, 65488

d. 65486, 65487

Feedback

Your answer is incorrect.
The correct answer is: 65486, 65486

Question 44

Not answered
Marked out of 1.00
Flag question

Question text

What will be the output of the program ?

```
#include<stdio.h>

int main()
{
    float arr[] = {12.4, 2.3, 4.5, 6.7};
    printf("%d\n", sizeof(arr)/sizeof(arr[0]));
    return 0;
}
```

Select one:
a. 5
b. 6
c. 7
d. 4

Feedback

Your answer is incorrect.
The correct answer is: 4

Question 45

Not answered
Marked out of 1.00
Flag question

Question text

What will be the output of the program if the array begins 1200 in memory?

```
#include<stdio.h>

int main()
{
    int arr[]={2, 3, 4, 1, 6};
    printf("%u, %u, %u\n", arr, &arr[0], &arr);
    return 0;
}
```

Select one:
- a. 1200, 1200, 1200
- b. 1200, 1202, 1204
- c. 1200, 1204, 1208
- d. 1200, 1202, 1200

Feedback

Your answer is incorrect.
The correct answer is: 1200, 1200, 1200

Question 46

Not answered
Marked out of 1.00
Flag question

Question text

How will you free the allocated memory ?

Select one:
- a. remove(var-name);
- b. dalloc(var-name);
- c. free(var-name);
- d. delete(var-name);

Feedback

Your answer is incorrect.
The correct answer is: free(var-name);

Question 47

Not answered
Marked out of 1.00
Flag question

Question text

What will be the output of the program?

```
#include<stdio.h>
int main()
{
    int i=0;
    for(; i<=5; i++);
        printf("%d", i);
    return 0;
}
```

Select one:

- a. C-program
- b. None of above
- c. Ps
- d. Error

Feedback

Your answer is incorrect.
The correct answer is: C-program

Question 48

Not answered
Marked out of 1.00
Flag question

Question text

What will be the output of the program?

```
#include<stdio.h>
int main()
{
    int a = 500, b = 100, c;
    if(!a >= 400)
        b = 300;
    c = 200;
    printf("b = %d c = %d\n", b, c);
```

```
    return 0;
}
```

Select one:

- a. b = 300 c = 200
- b. b = 100 c = 200
- c. b = 300 c = garbage
- d. b = 100 c = garbage

Feedback

Your answer is incorrect.
The correct answer is: b = 100 c = 200

Save the state of the flags

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