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CS502 Final Term Papers By Waqar (File 5)

Question No : 1 of 52 Marks: 1 (Budgeted Time 1 Min)

Suppose that a graph $G = (V,E)$ is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?

Answer (Please select your correct option)

VuAnswers.com

- $O(|V|^2)$
- $O(|V| \, |E|)$
- $O(|V|^2|E|)$
- $O(|V| + |E|)$

Made by: Waqar Siddhu

Question No : 2 of 52 Marks: 1 (Budgeted Time 1 Min)

Non-optimal or greedy algorithm for money change takes_____

Answer (Please select your correct option)

VuAnswers.com

- O(kN)
- $O(2^k)$
- O(N)
- O(k) p 99

Made by: Waqar Siddhu

Question No : 3 of 52 Marks: 1 (Budgeted Time 1 Min)

The Huffman algorithm finds a (n) _____ solution.

Answer (Please select your correct option)

VuAnswers.com

- Optimal
- Non-optimal
- Exponential
- Polynomial

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Question No : 4 of 52 Marks: 1 (Budgeted Time 1 Min)

Using ASCII standard the string "abacdaacac" will be encoded with _____ bits.

Answer (Please select your correct option) VuAnswers.com

- 80
- 160
- 320
- 100

Made by: Waqar Siddhu

Question No : 5 of 52 Marks: 1 (Budgeted Time 1 Min)

Consider the string "abacdaacac" if the string is coded with ASCII codes using Huffman encoding scheme, the message length would be

Answer (Please select your correct option) VuAnswers.com

- 8 bits
- 80 bits
- Less than 50 bits
- More than 50 bits

Made by: Waqar Siddhu

Question No : 6 of 52 Marks: 1 (Budgeted Time 1 Min)

Random access machine or RAM is a/an

Answer (Please select your correct option) VuAnswers.com

- Machine build by Al-Khwarizmi
- Mechanical machine
- Electronics machine
- Mathematical model

p 10

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Question No : 7 of 52 Marks: 1 (Budgeted Time 1 Min)

In order to say anything meaningful about our algorithms, it will be important for us to settle on a _____.

Answer (Please select your correct option) VuAnswers.com

- C++ program
- Java program
- Pseudo program
- Mathematical model of computation p 10

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Question No : 8 of 52 Marks: 1 (Budgeted Time 1 Min)

Divide-and-conquer involves breaking the problem into a small number of

Answer (Please select your correct option) VuAnswers.com

- Sub problems p 34
- Selection
- pivot
- Sieve

Made by: Waqar Siddhu

Question No : 9 of 52 Marks: 1 (Budgeted Time 1 Min)

Quick sort procedure was invented by

Answer (Please select your correct option) VuAnswers.com

- Hoare
- Sedgewick
- Mellroy
- Coreman

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Question No : 10 of 52 Marks: 1 (Budgeted Time 1 Min)

In Bucket sort, if there are duplicates then each bin can be replaced by a

Answer (Please select your correct option) VuAnswers.com

- Linked list p 69
- Heap
- Hash table
- Stack

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Question No : 11 of 52 Marks: 1 (Budgeted Time 1 Min)

In in-place sorting algorithm is one that uses no _____ arrays for storage.

Answer (Please select your correct option) VuAnswers.com

- two dimensional
- three dimensional
- n dimensional
- additional

Made by: Waqar Siddhu

Question No : 12 of 52 Marks: 1 (Budgeted Time 1 Min)

A p × q matrix A can be multiplied with a q × r matrix B. The result will be a p × r matrix C. In particular, for $1 \le i \le p$ and $1 \le j \le r$,

Answer (Please select your correct option) VuAnswers.com

- $C[i, j] = \sum_{k=1}^{q} A[i,k]B[k,j]$ p 84
- $C[i, j] = \sum_{k=1}^{q} A[k,i]B[k,j]$
- $C[i, j] = \sum_{k=1}^{q} A[k,i]B[j,k]$
- None of these

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Question No : 13 of 52 Marks: 1 (Budgeted Time 1 Min)

For a given chain of matrices A1, A2, A3, A4, the product A1 A2 A3 A4 can be fully parenthesized in _____ distinct way(s).

VuAnswers.com

Answer (Please select your correct option)

- Five
- Four
- Three
- Two

Made by: Waqar Siddhu

Question No : 14 of 52 Marks: 1 (Budgeted Time 1 Min)

Worst case running time of Quick Sort algorithm for an array with n elements is?

VuAnswers.com

Answer (Please select your correct option)

- n^2 p 49
- $n^{\frac{n}{2}}$
- n
- n^8

Made by: Waqar Siddhu

Question No : 15 of 52 Marks: 1 (Budgeted Time 1 Min)

If we encode and compress text using ASCII standard each character is represented by

VuAnswers.com

Answer (Please select your correct option)

- Fixed length codeword of 4 bits
- Variable length codeword up to 4 bits
- Variable length codeword up to 8 bits
- Fixed length codeword of 8 bits. p 99

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Question No : 16 of 52 Marks: 1 (Budgeted Time 1 Min)

The Huffman algorithm finds

Answer (Please select your correct option) VuAnswers.com

- sometime optimal some time non optimal solution
- space wise optimal and time wise non optimal solution
- a non-optimal solution
- an optimal solution

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Question No : 17 of 52 Marks: 1 (Budgeted Time 1 Min)

The Huffman algorithm time complexity

Answer (Please select your correct option) VuAnswers.com

- Can be improved up to O (n log n)
- Can be improved up to O($\sqrt{n}$ log n)
- Is always O (n^3)
- Is always O (n^2)

Made by: Waqar Siddhu

Question No : 18 of 52 Marks: 1 (Budgeted Time 1 Min)

Using ASCII standard the string "abacdaac"

Answer (Please select your correct option) VuAnswers.com

- If we use variable code for ASCII it will be 32 bits
- If we use fixed code for ASCII it will be 256 bits
- If we use variable code for ASCII it will be will 64 bits
- If we use fixed code for ASCII it will be 64 bits

Made by: Waqar Siddhu

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Question No : 19 of 52 Marks: 1 (Budgeted Time 1 Min)

Using Huffman encoding technique the string "abc" will take ……..

Answer (Please select your correct option)

VuAnswers.com

- 5 bits
- 6 bits
- 24 bits
- 12 bits

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Question No : 20 of 52 Marks: 1 (Budgeted Time 1 Min)

Using Huffman encoding technique the string "a@$a" will be encoded with _____bits

Answer (Please select your correct option)

VuAnswers.com

- 5
- 6
- 8
- Huffman encoding fail at this string

Made by: Waqar Siddhu

Question No : 21 of 52 Marks: 1 (Budgeted Time 1 Min)

In fractional knapsack we sort the

Answer (Please select your correct option)

VuAnswers.com

- Value per unit weight in increasing order
- Weight per unit value in increasing order
- Value per unit weight in decreasing order
- Weight per unit value in decreasing order

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Question No : 22 of 52 Marks: 1 (Budgeted Time 1 Min)

In generic graph traversal algorithm we

Answer (Please select your correct option)

VuAnswers.com

- put vertices in the bag data structure
- put edges in the bag data structure
- put edges in stack data structure
- put vertices in the stack data structure

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Question No : 23 of 52 Marks: 1 (Budgeted Time 1 Min)

In time stamp traversal we can calculate

Answer (Please select your correct option)

VuAnswers.com

- whether the graph has Cycles
- total number of cycles on the bases of forward edges
- total number of cycles on the bases if back edges
- total no of paths of certain length

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Question No : 24 of 52 Marks: 1 (Budgeted Time 1 Min)

when the graph has relatively few edges

Answer (Please select your correct option)

VuAnswers.com

- Prim's algorithm is better than Kruskal's
- Kruskal's algorithm is better than Prim's
- No one has priority over each other
- the assumption few edges is not valid

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Question No : 25 of 52 Marks: 1 (Budgeted Time 1 Min)

Kruskal's algorithm

Answer (Please select your correct option)

VuAnswers.com

- Choose the best tree edge
- Choose the vertex that gives the lightest weight
- Follow the dynamic programming rules for choosing edges
- Choose the best non-cycle edge

Made by: Waqar Siddhu

Question No : 26 of 52 Marks: 1 (Budgeted Time 1 Min)

In Prim's algorithm we use

Answer (Please select your correct option)

VuAnswers.com

- Queue data structure
- Priority Queue data structure
- Stack data structure
- Both stack and Queue data structures

Made by: Waqar Siddhu

Question No : 27 of 52 Marks: 1 (Budgeted Time 1 Min)

Adding any edge to a free tree

Answer (Please select your correct option)

VuAnswers.com

- keeps it the free tree and increases the size of the tree
- creates a unique cycle
- it is not allowed to add the edge in free tree
- creates multiple cycles

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Question No : 28 of 52 Marks: 1 (Budgeted Time 1 Min)

An un-weighted graph can be considered as a graph in which every edge has

Answer (Please select your correct option)

VuAnswers.com

- no weight assigned to it
- by default weight of one unit p 153
- its own different keys of weights
- there are no such type of graphs in theory

Made by: Waqar Siddhu

Question No : 29 of 52 Marks: 1 (Budgeted Time 1 Min)

Kruskal's Algorithm is used for

Answer (Please select your correct option)

VuAnswers.com

- calculating shortest path problem
- calculating Minimum spanning tree
- shortest and Minimum Spanning tree both can be calculated by it
- single source shortest path problems

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Question No : 30 of 52 Marks: 1 (Budgeted Time 1 Min)

Kruskal's Algorithm has time complexity

Answer (Please select your correct option)

VuAnswers.com

- overall Ø (E log E) and for sparse graph Ø (E log V)
- overall Ø (EV) and for sparse graph Ø (V^2)
- overall Ø (V log E)
- overall Ø (E log V) for sparse graph Ø (V log E)

Made by: Waqar Siddhu

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For More Visit VU Answer

Question No : 31 of 52 Marks: 1 (Budgeted Time 1 Min)

Bellman Ford algorithm applies relaxation to every

Answer (Please select your correct option)

VuAnswers.com

- edge of the graph and repeats exactly E-1 times
- edge but use the back edges for the completion
- edge of the graph and repeats exactly v-1 times
- vertex of the graph and repeats exactly E-1 times

Made by: Waqar Siddhu

Question No : 32 of 52 Marks: 1 (Budgeted Time 1 Min)

All algorithms having the time complexity $O(n^{10})$ and $O(n^{100})$ fall

Answer (Please select your correct option)

VuAnswers.com

- Non-Deterministic Polynomial class
- Deterministic Polynomial class
- $O(n^{10})$ in P class and $O(n^{100})$ in NP class
- $O(n^{10})$ in NP class and $O(n^{100})$ in P class

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Question No : 33 of 52 Marks: 1 (Budgeted Time 1 Min)

In NP-problems "NP" represents

Answer (Please select your correct option)

VuAnswers.com

- Non-deterministic Polynomials
- Null-polynomials
- Negative Polynomials
- Non-polynomials

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For More Visit VU Answer

Question No : 34 of 52 Marks: 1 (Budgeted Time 1 Min)

Space used by Floyd-Warshall algorithm is

Answer (Please select your correct option)

VuAnswers.com

- $\Theta(n^4)$
- $\Theta(n^3)$
- $\Theta(n^2)$ p 164
- $\Theta(2^n)$

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Question No : 35 of 52 Marks: 1 (Budgeted Time 1 Min)

If a problem is NP-complete

Answer (Please select your correct option)

VuAnswers.com

- there is no relation between NP and NP-complete
- it can be solved in P time
- it must be in P
- it must also be in NP

Made by: Waqar Siddhu

Question No : 36 of 52 Marks: 1 (Budgeted Time 1 Min)

If a problem "S" is NP- complete it must be

Answer (Please select your correct option)

VuAnswers.com

- NP and NP-hard
- NP not necessarily NP-Hard
- NP-hard means it is NP complete as well
- in P and NP

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Question No : 37 of 52 Marks: 1 (Budgeted Time 1 Min)

In the 3-coloring problem, for two vertices to be in the same group, they must be not _____to each other.

Answer (Please select your correct option)

VuAnswers.com

- Apart from
- Far from
- Near to
- Adjacent to

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Question No : 38 of 52 Marks: 1 (Budgeted Time 1 Min)

Algorithm's essential elements are

Answer (Please select your correct option)

VuAnswers.com

- Step wise solution
- Stepwise solution and finite time
- Step wise solution finite inputs
- Stepwise approach in which time and memory does not matter.

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Question No : 39 of 52 Marks: 1 (Budgeted Time 1 Min)

Search techniques of various algorithms look at____

Answer (Please select your correct option)

VuAnswers.com

- Many possible solutions
- Maximum 2 possible solutions
- Minimum 2 possible solutions
- Sorting solutions

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Question No : 40 of 52 Marks: 1 (Budgeted Time 1 Min)

Which traversal technique is look like propagating wave-front outward

Answer (Please select your correct option) VuAnswers.com

- Generic Traversal
- Breadth First Traversal p 117
- Depth First Traversal
- Time Stamp Traversal

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Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

In strong components problem what complete refers to?

Answer (Please click here to Add Answer) VuAnswers.com

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Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

What are quadratic series?

Answer (Please click here to Add Answer) VuAnswers.com

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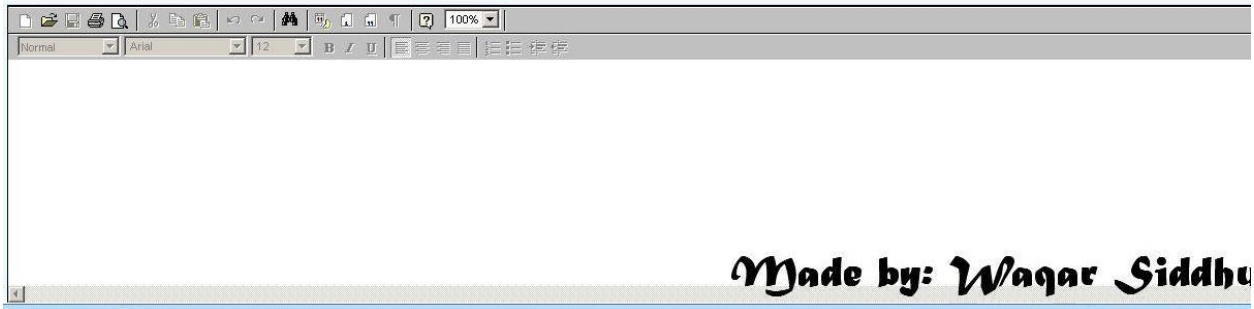
For More Visit VU Answer

Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

What is overall time for Kruskal's algorithm if the graph is sparse?

Answer (Please click here to Add Answer)

VuAnswers.com

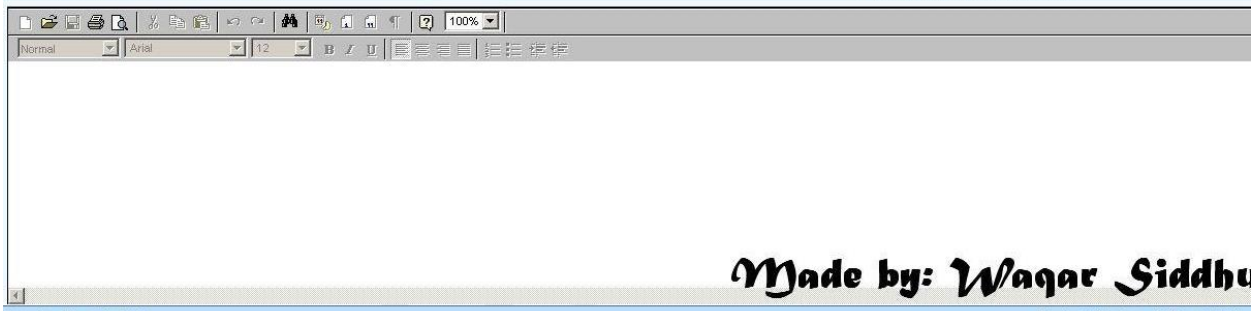


Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

When a problem is called a decision problem?

Answer (Please click here to Add Answer)

VuAnswers.com

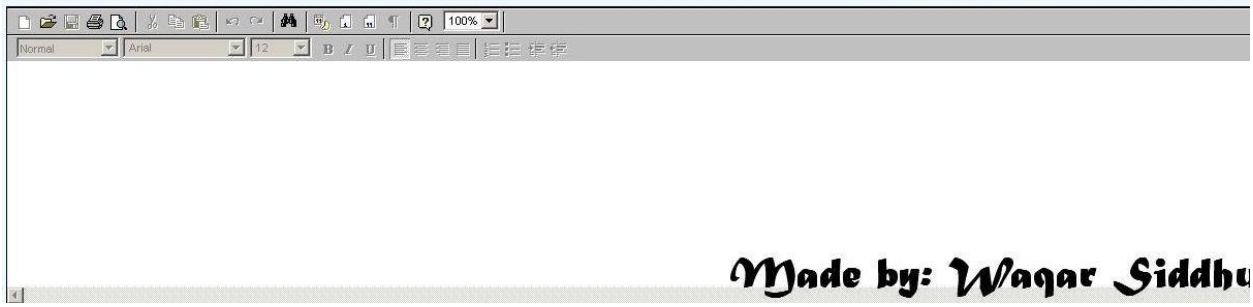


Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

Formally describe Minimum Spanning Trees Problem.

Answer (Please click here to Add Answer)

VuAnswers.com



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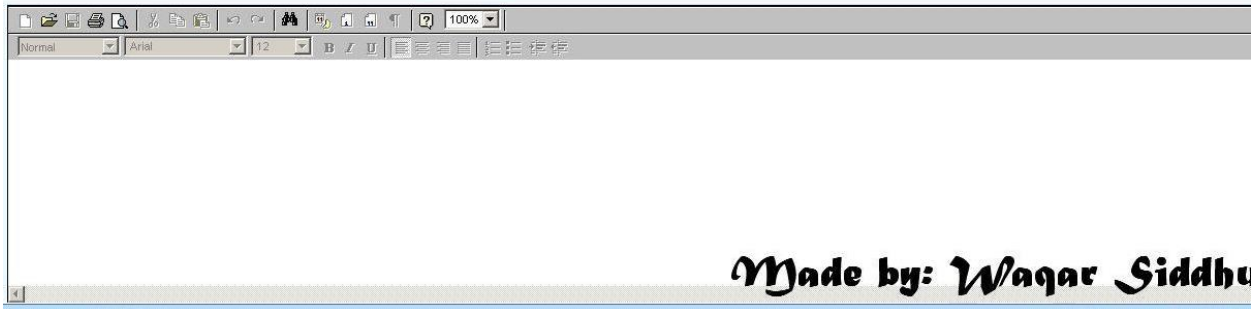
Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

True or false: A sequence of values in a column of the dynamic programming table for an instance of the knapsack problem is always non-decreasing? Give a brief description.

Answer (Please click here to Add Answer)

VuAnswers.com

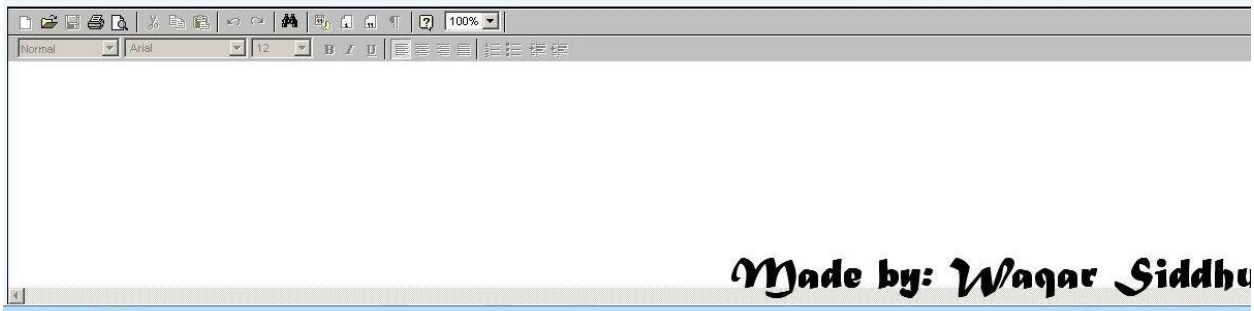


Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

Describe the relation between mutually reachable, equivalence relation, and component digraph.

Answer (Please click here to Add Answer)

VuAnswers.com



Question No : 48 of 52 Marks: 3 (Budgeted Time 6 Min)

You are given the task of laying down new railway line between Peshawar and Karachi. There are *n* intermediate cities that can be used and you know the cost of laying track between any pair of thes cities. Your goal is to spend the least total amount of track to construct the railway line. How would you determine the least amount of track and the cities to go through? Name the best algorithm whic addresses the above problem.

Answer (Please click here to Add Answer)

VuAnswers.com

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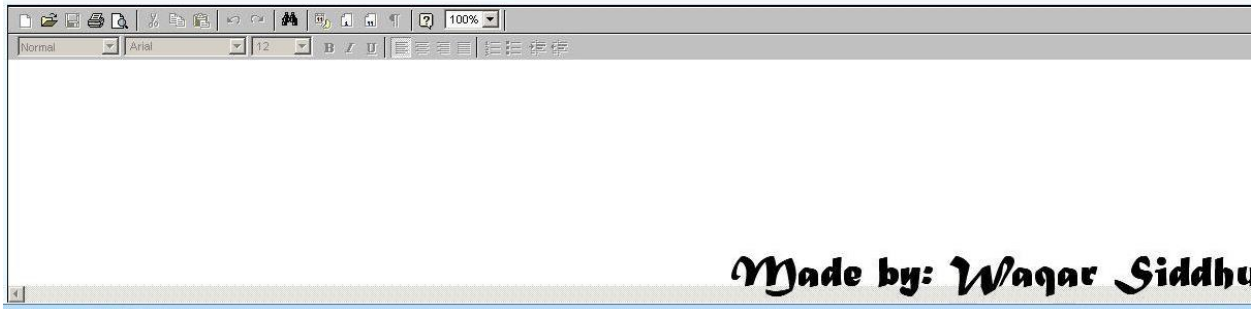
Question No : 49 of 52 **Marks: 5 (Budgeted Time 10 Min)**

You are given the task of laying down new railway lines which will connect all *n* cities. Thus for any pair of cities, you will end up with track connecting them. Note that two routes may share the same track; track laid between Lahore and Islamabad can be used to travel in both directions. Your goal is to use the minimum amount of track. How would you achieve the goal now? (Note : consider the scenario carefully and name only the best suited algorithm)

1 Dijkstra's algorithm
2 Prims Algorithm
3 Folloyed Warshal Agorithm

Answer (Please click here to Add Answer)

VuAnswers.com



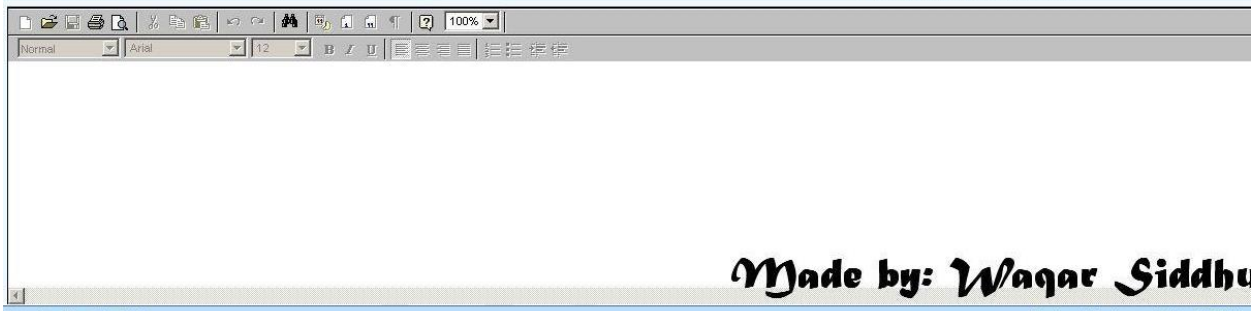
Made by: Waqar Siddhu

Question No : 50 of 52 **Marks: 5 (Budgeted Time 10 Min)**

Following is not the minimum spanning tree convert it into MST. [You can show final result in exam software and need not to show all intermediate steps].

Answer (Please click here to Add Answer)

VuAnswers.com



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Question No : 49 of 52 **Marks: 5 (Budgeted Time 10 Min)**

track; track laid between Lahore and Islamabad can be used to travel in both directions. Your goal is to use the minimum amount of track. How would you achieve the goal now? (Note : consider the scenario carefully and name only the best suited algorithm)

1 Dijkstra's algorithm
2 Prims Algorithm
3 Folloyed Warshal Agorithm
4 Bellman Ford Algorithm.

Answer (Please click here to Add Answer)

VuAnswers.com

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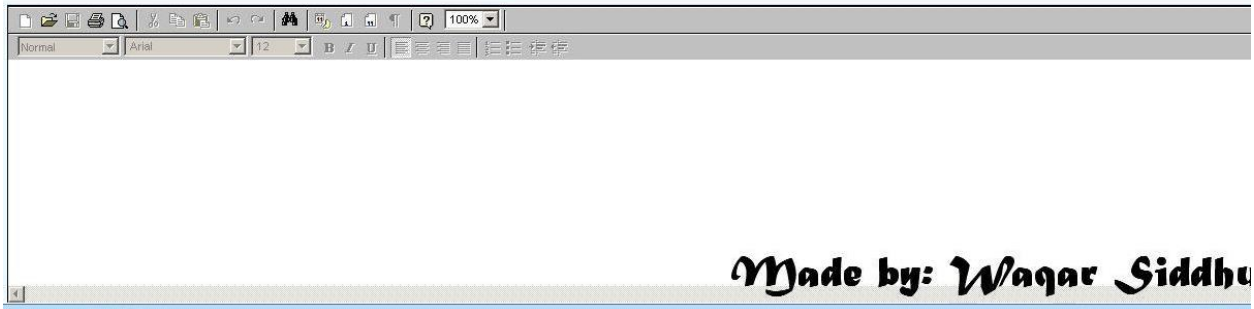
Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

Following is not the minimum spanning tree convert it into MST. [You can show final result in exam software and need not to show all intermediate steps].

Answer (Please click here to Add Answer)

VuAnswers.com



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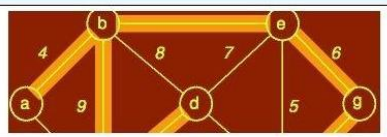
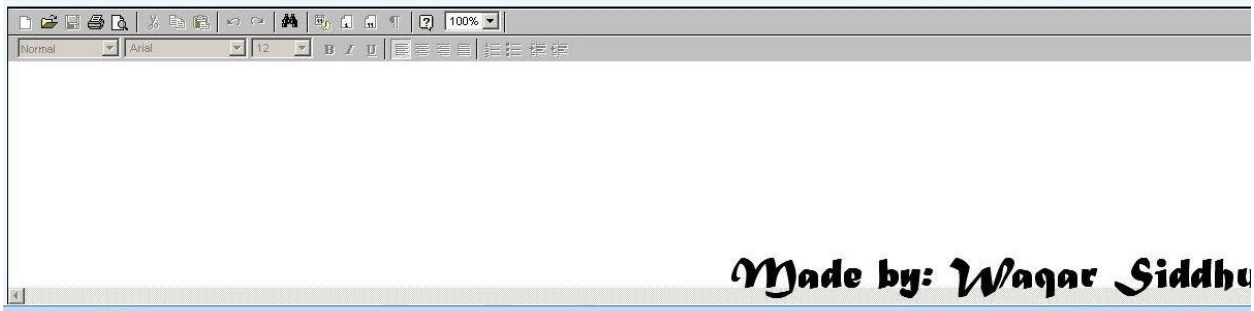
Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)



Answer (Please click here to Add Answer)

VuAnswers.com



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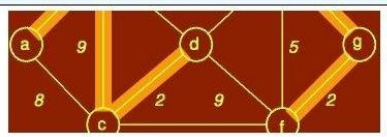
Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)



Answer (Please click here to Add Answer)

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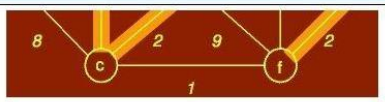
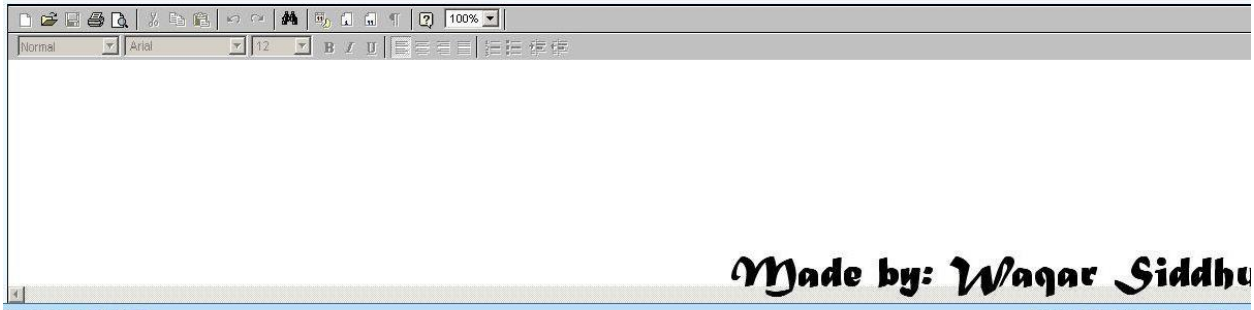
Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)



Answer (Please click here to Add Answer)

VuAnswers.com



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Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

Consider the following recursive `search` function which returns the index of the `array` element containing `key`, if such an element exists. Find out what is the complexity of search and show yo work.

```
int search( int* array, int left, int right, int key){
     int mid = (left + right)/2;
if( left == right )
     return left;
```

Answer (Please click here to Add Answer)

VuAnswers.com

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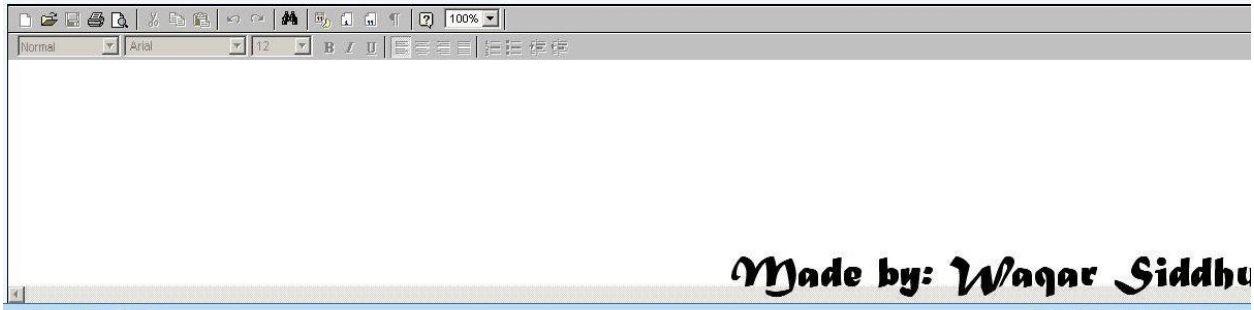
Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

```
    return left;
else if( array[mid] <= key )
    return search( array, mid+1, right, key );
else
    return search( array, left, mid, key );
}
```

Answer (Please click here to Add Answer)

VuAnswers.com



Question No : 52 of 52 Marks: 5 (Budgeted Time 10 Min)

Write pseudo code for the algorithm, if we implement the bag of knapsack by using a stack.

Answer (Please click here to Add Answer)

VuAnswers.com

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