1) What do you mean by a Data structure?
Ans: A Data Structure is a way to organise and manage the data that enable efficient access and modification for a Programmer. Arrays are one of the examples of data structure.

2) What are some of the applications of DS?
Ans: Arrays, Linked list, Stack, Queue, Tree, Graphs, Heap, Hashing.

3) What are the advantages of a Linked list over an array?
Ans: Linked lists have the dynamic size which shrinks and grows as we needed. And the insertion or deletion in linked lists is easy compared to arrays.

4) Write the syntax in C to create a node in the singly linked list.
Ans:
```
struct Node{
        int data;
        struct Node* next;
        };
struct Node* node = (struct Node*)malloc(sizeof(struct Node));
```

5) What is the use of a doubly-linked list when compared to that of a singly linked list?
Ans: 1. We can traverse in both forward and backward directions in a doubly linked list.
2. We can insert a node before a given node.
3. Delete operation is efficient if we know the position of the node to be deleted.

6) What is the difference between an Array and Stack?
Ans: Arrays:

1. Arrays uses the index to store and access the data.
2. Insertion and deletion can take place at any index.
3. Array has a fixed size.
4. Array contains elements of the same data type.
5. We can do linear search and binary search.

Stack:

1. Stack is based on Last In First Out(or First In Last Out) principle.
2. Insertion and deletion takes place only from one end called the top of the stack.
3. Stack has a dynamic size.
4. Stack can contain elements of different data types.
5. We can do only linear search.

7) What are the minimum number of Queues needed to implement the priority queue?
Ans: Two queues are needed. One for storing data and the other for priorities.

8) What are the different types of traversal techniques in a tree?
Ans: 1. In order
2. Pre order.

3. Post order.

9) Why it is said that searching a node in a binary search tree is efficient than that of a simple binary tree?
Ans: Because of the ordered characteristics of a binary search tree where the left subtree has elements less than the nodes element and right subtree has elements greater than the node elements.

10) What are the applications of Graph DS?
Ans: 1. Google Maps uses graphs where we find the path between cities based on the Algorithm which calculates the shortest path between two vertices.
2. World Wide Web pages can also be considered as graph implementation where pages are vertices and there are links between each pages are edges.

11) Can we apply the Binary search algorithm to a sorted Linked list?
Ans: There are two conditions for a efficiency binary search:

1. The data should be sorted.
2. Random Access.

We have no direct access to the elements of the linked list thus making binary search inefficient even though we can apply it.

12) When can you tell that a Memory Leak will occur?
Ans: A memory leak is a type of resource leak that occurs when a programmer creates a memory in heap and forgets to delete it when it is no longer needed. It may also occurs when an object is stored in memory but cannot be accessed by the program.

13) How will you check if a given Binary Tree is a Binary Search Tree or not?
Ans: A binary search tree is a binary tree which has the following properties:

1. The left subtree of a node contains only nodes with keys less than the node's key.
2. The right subtree of a node contains only nodes with keys greater than the node's key.
3. Both the left and right subtree must also be binary search trees.

14) Which data structure is ideal to perform recursion operation and why?
Ans: Stack is ideal because of its LIFO property. It remembers its caller so knows whom to return when the function has to return.
15) What are some of the most important applications of a Stack?
Ans: 1 Infix to Postfix or Prefix conversion.
2. Redo and undo features.
3. Balancing of symbols.
4. Algorithms like Tower of Hanoi, tree traversals, histogram problem.
5. Backtracking.

16) Convert the below given expression to its equivalent Prefix And Postfix notations.
Ans: (No Expression Provided in the Question)