

Program: SE Information Technology  
Curriculum Scheme: REV- 2019 'C' Scheme  
Examination: Second Year Semester III

Course Code: ITC302 and Course Name: Data Structure and Analysis

Time :2 Hour

Max.Marks:80

<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks (2 marks each)</b>
1.	Kruskal's algorithm for finding a minimum spanning tree of a weighted graph G with n vertices and m edges has the time complexity of
Option A:	O(n)
Option B:	O (m, n)
Option C:	O (m log n)
Option D:	O (m <sup>2</sup> )
2.	What will be the number of elements in the left subtree and right subtree of the heap if the following elements are inserted in the order: 45, 26, 84, 63, 27, 94, 47?
Option A:	(3, 3)
Option B:	(2, 4)
Option C:	(4, 3)
Option D:	(4, 2)
3.	The prefix form of A - B/(C*D\$E) is
Option A:	-1*\$ACBDE
Option B:	-ABCD*\$DE
Option C:	-A/B*\$C\$DE
Option D:	-A/BC*\$DE
4.	The following sequence of operations is performed on a stack push(1), push(2), pop, push(1), push(2), pop, pop, pop, push(2), pop. The sequence of the popped out values is
Option A:	2, 2, 1, 1, 2
Option B:	2, 2, 1, 2, 2
Option C:	1, 2, 1, 2, 2
Option D:	2, 1, 2, 2, 2
5.	Which data structure is used for implementing recursion?
Option A:	Queue
Option B:	Stack
Option C:	Array
Option D:	List
6.	If a Pop operation is performed on an empty stack, then which of the following situations will occur?
Option A:	Overflow

Option B:	Underflow
Option C:	Array out of bound
Option D:	Empty
7.	CPU scheduler can be implemented by which of the following data structures?
Option A:	Stack
Option B:	Queue
Option C:	Graph
Option D:	Tree
8.	The Pivot Element is used in which Sorting Algorithm
Option A:	Selection Sort
Option B:	Merge Sort
Option C:	Quick Sort
Option D:	Radix Sort
9.	Which of the following is not a technique to avoid a collision?
Option A:	Separate Chaining
Option B:	Increasing hash table size
Option C:	Open addressing
Option D:	Linear probing
10.	If several elements are competing for the same bucket in the hash table, what is it called?
Option A:	Replication
Option B:	Collision
Option C:	Duplication
Option D:	Diffusion
11.	The Sorting Techniques which is based on the LSB to MSB is
Option A:	Insertion Sort
Option B:	Merge Sort
Option C:	Radix Sort
Option D:	Selection Sort
12.	In an m-way Tree ( B tree), the value of "m" Should be
Option A:	ODD Number
Option B:	Even Number
Option C:	Any Random number
Option D:	Integer number
13.	A spanning Tree is defined as
Option A:	Tree with No cycle
Option B:	Graph with No cycle & contains all the vertices
Option C:	Graph with no Cycle
Option D:	Tree with No cycle & contains all the vertices
14.	Which data structure is used in Depth First Search
Option A:	Stack
Option B:	Queue

Option C:	Stack & Queue
Option D:	Stack or Queue
15.	Which of the following tree is called as a Height Balanced Tree
Option A:	Binary Tree
Option B:	Binary Search Tree
Option C:	AVL Tree
Option D:	Complete Binary Tree
16.	When the edges in a graph have no direction, the graph is called
Option A:	Undirected
Option B:	Directed
Option C:	Connected
Option D:	Weighted
17.	Which of the following is a Graph Traversal Method
Option A:	Pre-order Traversal
Option B:	Depth First Search
Option C:	In-order Traversal
Option D:	Post-order Traversal
18.	In the winding phase, the stack grows as new activation records are _____
Option A:	Pushed
Option B:	Poped
Option C:	Peeked
Option D:	Overflow
19.	If a function calls itself i.e f1() is called inside its own function body, then that recursion is
Option A:	Indirect recursion
Option B:	Direct recursion
Option C:	Complete recursion
Option D:	Incomplete recursion
20.	The fit method in which the whole list is traversed and the memory is allocated from the free block whose size is closest to the size of the memory requested is----
Option A:	First fit
Option B:	Worst fit
Option C:	Best fit
Option D:	Average fit

<b>Q2</b>	<b>Solve any Two Questions out of Three</b>	<b>10marks each</b>
A	Write an algorithm for implementing queue using array.	
B	Explain BFS and DFS algorithm with examples.	
C	Write the algorithm for merge sort. Comment on its complexity?	

<b>Q3</b>	<b>Solve any Two Questions out of Three</b>	<b>10marks each</b>
A	Write an algorithm to convert INFIX to POSTFIX expression?	
B	What is minimum spanning tree? Explain Kruskal's Algorithm	
C	Construct Binary Tree from given Inorder and Postorder traversal sequence Inorder: "INFORMATION" Postorder: "INOFMAINOTR"	