Program: SE Information Technology Engineering

Curriculum Scheme: Revised 2016

Examination: Second Year Semester III

Course Code: SEITC303 **Course Name:** Data Structures

Time: 2-hour Max. Marks: 80

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Note to the students: -1. All the Questions are compulsory.

2. Q1. To Q20 carries 2 marks each.

Q1.	In the linked list implementation of a queue, where does a new element be inserted?
Option A:	At the head of the linked list.
Option B:	At the tail of the linked list.
Option C:	At the center position of the linked list.
Option D:	Anywhere in the linked list.
Q2.	ADT is called as Abstract because .....
Option A:	It is completely independent data type.
Option B:	It is collection of different data types.
Option C:	Implementation details are hidden.
Option D:	It is based on primitive data types.
Q3.	The Overflow condition to insert element in Circular queue is:
Option A:	Front = 0 and Rear != Max - 1
Option B:	Front = -1 and Rear = Max - 1
Option C:	Front = -1 and Rear = -1
Option D:	Front = 0 and Rear = Max - 1

Q4.	The time complexity for the following nested loop is: for (i=0;i<100;i++) for (j=0;j<i;j++)
Option A:	O(log n)
Option B:	O(n log n)
Option C:	O((n+1)/2)
Option D:	O(n*(n+1)/2)
Q5.	The position of the queue from which an element is deleted is called as?
Option A:	Rear
Option B:	Front
Option C:	Top
Option D:	Mid
Q6.	Fill in the Blanks: The time complexity of an algorithm is the running time given as a function of _____.
Option A:	Output size
Option B:	Output space
Option C:	Input size
Option D:	Input space
Q7.	What is compaction?
Option A:	a technique for overcoming internal fragmentation
Option B:	a paging technique
Option C:	a technique for overcoming external fragmentation
Option D:	a technique for overcoming fatal error
Q8.	Recursion is a method in which the solution of a problem depends on _____.
Option A:	Larger instances of different problems
Option B:	Larger instances of the same problem
Option C:	Smaller instances of the same problem
Option D:	Smaller instances of different problems

Q9.	In recursion, the condition for which the function will stop calling itself is _____.
Option A:	Best case
Option B:	Worst case
Option C:	Base case
Option D:	There is no such condition
Q10.	Selection sort first finds the _____ element in the list and put it in the first position.
Option A:	Middle
Option B:	Largest
Option C:	Last
Option D:	Smallest
Q11.	For merging two sorted lists of size m and n into sorted list of size m+n, we require comparisons of _____.
Option A:	O(m*n)
Option B:	O(log m*n)
Option C:	For merging two sorted lists of size m and n into sorted list of size m+n, we require comparisons of _____. *1 point
Option D:	O(m*n)
Q12.	In _____, search start at the beginning of the list and check every element in the list.
Option A:	Linear Search
Option B:	Binary Search
Option C:	Hash Search
Option D:	Binary Tree Search
Q13.	What data structure would you mostly likely see in a non recursive implementation of a recursive algorithm?
Option A:	Linked List
Option B:	Stack
Option C:	Queue
Option D:	Tree
Q14.	In the Polynomial linked list, the _____ of the polynomial are defined as the data node of the list.
Option A:	coefficients and exponents
Option B:	variables and exponents
Option C:	variables and coefficients
Option D:	operators
Q15.	What is the postfix expression for the corresponding infix expression? a+b*c+(d*e)
Option A:	abc*+de*+
Option B:	abc+*de*+

Option C:	a+bc*de+*
Option D:	abc*+(de)*+
Q16.	The number of the edges from the root to the node is called _____ of the tree.
Option A:	Height
Option B:	Depth
Option C:	Length
Option D:	Width
Q17.	In a full binary tree, if number of internal nodes is I, then number of leaves L are...
Option A:	L = 2 * I
Option B:	L = I - 1
Option C:	L = I + 1
Option D:	L = 2 * I - 1
Q18.	A threaded binary tree is a binary tree in which every node that does not have right child has a thread to it's _____.
Option A:	Pre-order successor
Option B:	In-order successor
Option C:	In-order predecessor
Option D:	Post-order successor
Q19.	An adjacency matrix representation of a graph cannot contain information of:
Option A:	Nodes
Option B:	Edges
Option C:	Direction of edges
Option D:	Parallel edges
Q20.	What is the number of edges present in a complete graph having n vertices?
Option A:	(n*(n+1))/2
Option B:	(n*(n-1))/2
Option C:	(n+1)/2
Option D:	n+1
Q21.	Given a string, reverse it using a stack. For example, the string "structures" should be converted to "serutcurts". Write a C program. (5 marks)
Q22.	Insert the following elements in a AVL search tree: 40,23,32,84,55,88,46,71,57. (10 marks)
Q23.	Construct the binary tree from the traversals given. (5 marks) Postorder: C B E H G I F D A Inorder: B C A E D G H F I
Q24.	Translate the given infix expression into an equivalent postfix expression. (10 marks) (a + b * c - d) / (e * f)

Q25.	Arrange the given elements in ascending order using Radix sort. (5 marks) 361, 12, 527, 143, 9, 768, 348.
Q26.	Write a C program for Quick sort. (5 marks)