Subject: **Data Structures CS301**
Test: **Midterm past Paper questions**
Total Questions: **91**

Question No.	Question Details	Total Marks
1	ddd	1
☑	ddd	
☐	dfdfdf	
☐	dfd	
☐	fdfdf	
2	Deleting a leaf node in binary search tree involves setting _____ pointer/s of that node's parent as null.	1
☑	1	
☐	2	
☐	3	
☐	4	
3	A node cannot be deleted, when the node to be deleted has both left and right subtrees.	1
☐	True	
☑	False	
4	An array is a group of consecutive related memory locations.	1
☑	True	
☐	False	
5	Consider the following infix expression: 3 + 5 * 6 – 7 * (8 + 5) Which of the following is a correct equivalent expression(s) for the above?	1
☐	3 6 5 + * 7 5 8 + - *	
☐	3 6 5 7 5 8 + * + - *	
☐	3 5 6 + * 7 8 5 + - *	
☑	3 5 6 * + 7 8 5 + * -	

6 The difference between a binary tree and a binary search tree is that ,a binary search tree has		1
☐	two children per node whereas a binary tree can have none, one, or two children per node	
☐	in binary search tree nodes are inserted based on the values they contain	
☐	in binary tree nodes are inserted based on the values they contain	
☐	none of these	
7 We can add elements in QUEUE From _____		1
☐	Front	
☑	Rear	
☐	From Both Rare and Front	
☐	None of these	
8 Which of the following abstract data types are NOT used by Integer Abstract Data type group?		1
☐	short	
☐	Int	
☑	float	
☐	long	
9 Which one of the following statements is correct?		1
☑	Array size is fixed once it is created	
☐	Link List size is fixed once it is created	
☐	Binary Search Tree size isfixed once it is created	
☐	AVL Tree size is fixed once it is created	
10 Linked lists are collections of data items "lined up in a row" , insertions and deletions can be made only at the front and the back of a linked list.		1
☐	True	
☑	False	

11 In a program a reference variable, say x, can be declared as		1
☑	int &x ;	
☐	int *x ;	
☐	int x ;	
☐	None of the given options	
12 Which one of the following statement is NOT correct .		1
☑	In linked list the elements are necessarily to be contiguous	
☐	In linked list the elements may locate at far positions in the memory	
☐	In linked list each element also has the address of the element next to it	
☐	In an array the elements are contiguous	
13 Is a data structure that can grow easily dynamically at run time without having to copy existing elements?		1
☐	Array	
☑	List	
☐	Both of these	
☐	None of these	
14 Queue follows		1
☐	Last in First out	
☐	First in Last out	
☑	First in First out	
☐	None of these	
15 Parameters in function call are passed using,		1
☑	Stack	
☐	Queue	
☐	Binary Search Tree	
☐	AVL Tree	

16 Which statement of the following statements is incorrect?		1
☐	Lists can be implemented by using arrays or linked lists	
☐	A list is a sequence of one or more data items	
☐	Stack is a special kind of list in which all insertions and deletions take place at one end	
☑	Stacks are easier to implement than lists	
17 The operation for removing an entry from a stack is traditionally called:		1
☐	delete	
☐	peek	
☑	pop	
☐	remove	
18 Suppose a pointer has been declared in main but has not assigned any variable address then		1
☐	That pointer points to First byte in main function	
☐	That pointer contains a NULL value	
☑	That pointer points to any memory address	
☐	None of these	
19 A Compound Data Structure is the data structure which can have multiple data items of same type or of different types.Which of the following can be considered compound data structure?		1
☑	Arrays	
☐	LinkLists	
☐	Binary Search Trees	
☐	All of the given options	
20 The tree data structure is a		1
☐	Linear data structure	
☑	Non-linear data structure	
☐	Graphical data structure	
☐	Data structure like queue	

21 Which one of the following is a valid postfix expression?		1
☐	ab+c*d-	
☑	abc*+d-	
☐	abc+*d-	
☐	(abc*)+d-	
22 When an operator is used in between two operands this is which type of notation		1
☐	Prefix	
☐	Postfix	
☑	Infix	
☐	None of the Above	
23 What will be the valid postfix notation of A+B*C-D		1
☐	ABC+*D-	
☑	ABC*+D-	
☐	ABCD+-*	
☐	AB+D*C	
24 Tree data structure is a		1
☐	Linear	
☑	Non Linear	
☐	Circular	
☐	None of Above	
25 Non recursive calls are faster than the Recursive calls.		1
☑	True	
☐	False	

26 Following are the linear data structures:-		1
☐	Stacks	
☐	Queues	
☑	Both Stacks and Queues	
☐	None of the above	
27 Highest Operators Precedence is of the following operator:-		1
☐	Plus	
☐	Minus	
☑	Multiply	
☐	Exponentiation	
28 Each node in a BST has Pointers:-		1
☐	1	
☑	2	
☐	3	
☐	4	
29 After creation of an array:-		1
☐	Size can be increase but can not be decreased.	
☐	Size can be decreased but can not be increased.	
☑	Size can neither be increased nor be decreased.	
☐	Size can be increased and can also be decreased	
30 BST is a Structure:-		1
☐	Linear	
☑	Non Linear	
☐	Circular	
☐	None of Above	

31 To check the depth of an AVL tree following time will be taken:-		1
☐	1.66 Log2n	
☑	1.44 Log2n	
☐	Log2 (n+1)-1	
☐	1.66 Log2n (n+1)	
32 In an AVL tree to delete a parent with two childs in a straight line following rotations will be required		1
☐	Single	
☑	Double	
☐	Triple	
☐	None.of the given options	
33 Which of the following is a non linear data structure?		1
☐	Linked List	
☐	Stack	
☐	Queue	
☑	Tree	
34 Consider the following infix expression. 5 + 6/2 If one converts the above expression into postfix, what would be the resultant expression?		1
☐	56/ + 2	
☑	5 6 2 / +	
☐	/62 + 5	
☐	5 6 / 2 +	
35 There is/are case/s for rotation in an AVL tree,		1
☐	1	
☐	2	
☐	3	
☑	4	

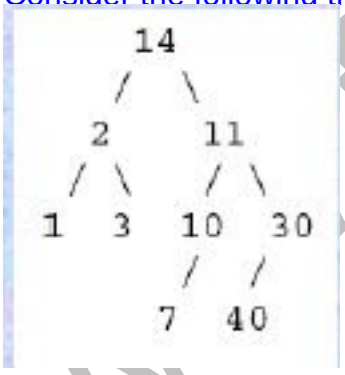
36 Searching an element in an AVL tree take maximum in AVL tree,		1
☐	Log2(n+1) time (where n is no. of nodes	
☐	Log2(n+1) -1	
☑	1.44 Log2n	
☐	1.66 Log2n	
37 Which of the following is "TRUE" about arrays,		1
☐	We can increase the size of arrays after their creation.	
☐	We can decrease the size of arrays after their creation.	
☐	We can increase but can't decrease the size of arrays after their creation.	
☑	We can neither increase nor decrease the array size after their creation.	
38 Four statements about trees are below. Three of them are correct. Which one is INCORRECT?		1
☐	Trees are recursively defined multi-dimensional data structures tree	
☐	The order of a tree indicates a maximum number of children allowed at each node of the	
☐	A search tree is a special type of tree where all values (i.e. keys) are ordered	
☑	If Tree1's size is greater than Tree2's size, then the height of Tree1 must also be greater than Tree2's height.	
39 Which one of the following operators has higher priority than all of others?		1
☑	Multiplication operator	
☐	Minus operator	
☐	Plus operator	
☐	Exponentiation operator	
40 A queue is a----- data structure, whereas a stack is a -----data structure.		1
☑	FIFO, LIFO	
☐	LIFO,FIFO	
☐	both given options	
☐	None of these	

41 Suppose that the class declaration of SomeClass includes the following function prototype. bool LessThan(SomeClass anotherObject); Which of the following tests in the client code correctly compares two class objects alpha and beta?		1
☐	if (alpha < beta)	
☑	if (alpha.LessThan(beta))	
☐	if (LessThan(alpha, beta))	
☐	if (LessThan(alpha).beta)	
42 Which one of the following statements is NOT correct?		1
☑	Array size can be changed after its creation.	
☐	Link List size can be changed after its creation	
☐	Binary Search Tree size can be changed after its creation	
☐	AVL Tree size can be changed after its creation	
43 Which one of the following calling methods does not change the original value of the argument in the calling function?		1
☐	None of the given options	
☑	Call by passing the value of the argument	
☐	Call by passing reference of the argument	
☐	Call by passing the address of the argument	
44 In an array list the current element is		1
☑	The first element	
☐	The middle element	
☐	The last element	
☐	The element where the current pointer points to	
45 In an array we can store data elements of different types.		1
☐	True	
☑	False	

46 An array is a group of consecutive related memory locations.		1
☑	True	
☐	False	
47 The following are statements related to queues. (i) The last item to be added to a queue is the first item to be removed (ii) A queue is a structure in which both ends are not used (iii) The last element hasn't to wait until all elements preceding it on the queue are removed (iv)A queue is said to be a last-in-first-out list or LIFO data structure. Which of the above is/are related to normal queues?		1
☐	(iii) and (ii) only	
☐	(i), (ii) and (iv) only	
☐	(ii) and (iv) only	
☑	None of the given options	
48 Which of the following can be used to reverse a string value,		1
☑	Stack	
☐	Queue	
☐	Both of these	
☐	None of these	
49 _____ is the maximum number of nodes that you can have on a stack-linked list ?		1
☐	Zero	
☐	2n (where n is the number of nodes in linked list)	
☑	Any Number	
☐	None of these	
50 Consider the following sequence of push operations in a stack: stack.push('7'); stack.push('8'); stack.push('9'); stack.push('10'); stack.push('11'); stack.push('12');		1
☑	7 8 9 10 11 12	
☐	9 8 11 10 7 12	
☐	9 10 8 11 12 7	
☐	9 10 8 12 7 11	

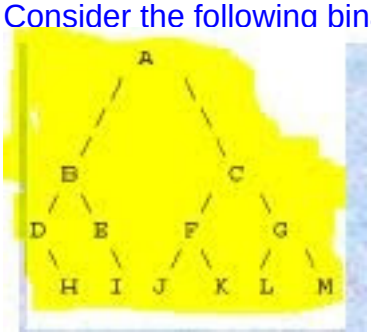
51 The operation for removing an entry from a stack is traditionally called:		1
☐	delete	
☐	peek	
☑	pop	
☐	remove	
52 The operation for adding an entry to a stack is traditionally called :		1
☐	add	
☐	append	
☐	insert	
☑	push	
53 In C what is the operation that you can not do with primitive types?		1
☐	Assign a value to primitive type using a literal	
☐	Declare primitive types to be constant using the Const keyword	
☑	Create a new instance of primitive type with New keyword	
☐	None of these	
54 Suppose that the class declaration of SomeClass includes the following function prototype. bool LessThan(SomeClass anotherObject); Which of the following tests in the client code correctly compares two class objects alpha and beta?		1
☐	if (alpha < beta)	
☑	if (alpha.LessThan(beta))	
☐	if (LessThan(alpha, beta))	
☐	if (LessThan(alpha).beta)	
55 Suppose currentNode refers to a node in a linked list (using the Node class with member variables called data and nextNode). What boolean expression will be true when cursor refers to the tail node of the list?		1
☑	(currentNode == null)	
☐	(currentNode->nextNode == null)	
☐	(nextNode.data == null)	
☐	(currentNode.data == 0.0)	

56 A tree is an AVL tree if		1
☐	Any one node fulfills the AVL condition	
☐	At least half of the nodes fulfill the AVL condition	
☑	All the nodes fulfill the AVL condition	
☐	None of the given options	
57 In which of the traversal method, the recursive calls can be used to traverse a binary tree ?		1
☑	In preorder traversal only	
☐	In inorder traversal only	
☐	In postorder traversal only	
☐	All of the given options	
58 Doubly Linked List always has one NULL pointer.		1
☐	True	
☑	False	
59 A subscript of an array may be an integer or an integer expression.		1
☑	True	
☐	False	
60 “+” is a _____operator.		1
☐	Not an	
☐	Unary	
☑	Binary	
☐	Ternary	
61 “+” is a _____operator.		1
☐	Not an	
☐	Unary	
☑	Binary	
☐	Ternary	

62 A binary search tree should have minimum of one _____ node/s at each level,		1
☐	One	
☑	Two	
☐	Three	
☐	Four	
63 We access elements in AVL Tree in,		1
☐	Linear way only	
☑	Non Linear way only	
☐	Both linear and non linear ways	
☐	None of the given options	
64 The nodes with no successor are called _____		1
☐	Root Nodes	
☑	Leaf Nodes	
☐	Both of these	
☐	None of these	
65 Consider the following tree.  How many of the nodes have at least one sibling?		1
☐	8	
☐	7	
☐	5	
☑	6	

66 I have implemented the queue with a linked list, keeping track of a front pointer and a rear pointer. Which of these pointers will change during an insertion into an EMPTY queue?		1
☐	Neither changes	
☐	Only front pointer changes.	
☑	Only rear pointer changes.	
☐	Both change.	
67 Each node in doubly link list has,		1
☐	1 pointer	
☑	2 pointer	
☐	3 pointer	
☐	4 pointer	
68 Which one is a self- referential data type?		1
☐	Stack	
☐	Queue	
☐	Link list	
☑	All of these	
69 A queue where the de-queue operation depends not on FIFO, is called a priority queue		1
☐	False	
☑	True	
70 Suppose currentNode refers to a node in a linked list (using the Node class with member variables called data and nextNode). What statement changes currentNode so that it refers to the next node?		1
☐	currentNode ++;	
☐	currentNode = nextNode;	
☐	currentNode += nextNode;	
☑	currentNode = currentNode->nextNode;	

71 A tree is an AVL tree if		1
☐	Any one node fulfills the AVL condition	
☐	At least half of the nodes fulfill the AVL condition	
☑	All the nodes fulfill the AVL condition (	
☐	None of the given options	
72 Which one of the following calling methods does not change the original value of the argument in the calling function?		1
☐	None of the given options	
☑	Call by passing the value of the argument	
☐	Call by passing reference of the argument	
☐	Call by passing the address of the argument	
73 Each operator in a postfix expression refers to the previous _____ operand(s).		1
☐	One	
☑	Two	
☐	Three	
☐	Four	
74 Which one of the following statement is NOT correct .		1
☑	In linked list the elements are necessarily to be contiguous	
☐	In linked list the elements may locate at far positions in the memory	
☐	In linked list each element also has the next to it	
☐	In an array the elements are contiguous	
75 AVL Tree is,		1
☑	Non Linear data structure	
☐	Linear data structure	
☐	Hybrid data structure (Mixture of Linear and Non Linear)	
☐	None of the given options.	

76 We access elements in AVL Tree in,		1
☐	Linear way only	
☑	Non Linear way only	
☐	Both linear and non linear ways	
☐	None of the given options.	
77 Consider the following binary search tree (BST):  If node A in the BST is deleted, which two nodes are the candidates to take its place?		1
☐	J and I	
☐	H and E	
☐	D and E	
☑	L and M	
78 _____ is a binary tree where every node has a value, every node's left subtree contains only values less than or equal to the node's value, and every node's right subtree contains only values that are greater then or equal?		1
☐	Strictly Binary Tree	
☑	Binary Search tree	
☐	AVL tree	
☐	All of these	
79 The expression AB+C* is called?		1
☐	Prefix expression	
☑	Postfix expression	
☐	Infix expression	
☐	None of these	

80 Suppose we have a circular array implementation of the queue class, with ten items in the queue stored at data[2] through data[11]. The CAPACITY is 42, i.e., the array has been declared to be of size 42. Where does the push member function place the new entry in the array?		1
☐	data[1]	
☐	data[2]	
☐	data[11]	
☑	data[12]	
81 In the linked list implementation of the stack class, where does the push member function places the new entry on the linked list?		1
☑	At the head	
☐	At the tail	
☐	After all other entries that are smaller than the new entry.	
☐	After all other entries that are greater than the new entry.	
82 Suppose n is the number of nodes in a complete Binary Tree then maximum steps required for a search operation are,		1
☑	Log2 (n+1) -1	
☐	Log2 (n+1)	
☐	Log2 (n) – 1	
☐	Log2 (n)	
83 What is the maximum depth of recursive calls a function may make?		1
☐	1	
☐	2	
☐	n (where n is the argument)	
☑	There is no fixed maximum	

84 Here is the start of a C++ class declaration: class foo { public: void x(foo f); void y(const foo f); void z(foo f) const; ... Which of the three member functions can alter the PRIVATE member variables of the foo object that activates the function?		1
☐	Only x can alter the private member variables of the object that activates the function.	
☐	Only y can alter the private member variables of the object that activates the function.	
☐	Only z can alter the private member variables of the object that activates the function.	
☐	Two of the functions can alter the private member variables of the object that activates the function.	
85 When should you use a const reference parameter?		1
☐	Whenever the parameter has huge size.	
☑	Whenever the parameter has huge size, the function changes the parameter within its body, and you do NOT want these changes to alter the actual argument.	
☐	Whenever the parameter has huge size, the function changes the parameter within its body, and you DO want these changes to alter the actual argument.	
☐	Whenever the parameter has huge size, and the function does not change the parameter within its body.	
86 The tree data structure is a		1
☐	Linear data structure	
☑	Non-linear data structure	
☐	Graphical data structure	
☐	Data structure like queue	
87 In the call by value methodology, a copy of the object is passed to the called function.		1
☑	True	
☐	False	

88
Consider the function X as under
int X (int& Value)
{
return Value;
}
Now a and b are integers in a calling function. Which one of the following is a valid call to the above function
X.
		1

☐	a = X (b) ;	
☑	a = X (&b) ;	
☐	a = X (*b) ;	
☐	None of the given options	
89 The data of the problem is of 2GB and the hard disk is of 1GB capacity, to solve this problem we should		1
☐	Use better data structures	
☑	Increase the hard disk space	
☐	Use the better algorithm	
☐	Use as much data as we can store on the hard disk	
90 A queue where the de-queue operation depends not on FIFO, is called a priority queue		1
☑	True	
☐	False	
No Question Found		1
☐	No option found!	
☐	No option found!	

Signature:

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