PHY-101 Quiz OnlineTest

Sr	Questions	Answers Choice
1	A binary relation R over S is called an equivalence relation if it has following property(s)	A. Reflexivity B. Symmetry C. Transitivity D. All of the given options
2	We can build a heap in _____ time.	A. Linear B. Exponential C. Polynomial D. None of the above
3	If a max heap is implemented using a partially filled array called data, and the array contains n elements (n > 0), where is the entry with the greatest value?	A. Data[0] B. data[1] C. data[n-1] D. data[n]
4	In a min heap , preculateDown procedure will move smaller value_____ and bigger value_____.	A. left,right B. right,left C. up,down D. down,up
5	"+" is a _____operator.	A. Unary B. Binary C. Ternary D. None of the above
6	Which formula is the best approximation for the depth of a heap with n nodes?	A. log (base 2) of n B. The number of digits in n (base 10), e.g., 145 has three digits C. The square root of n D. n
7	The definition of transitive property is	A. For all element x member of S, x R x B. For all elements x and y, x R y if and only if y R x C. For all elements x, y and z, if x R y and y R z then x R z D. For all elements w, x, y and z, if x R y and w R z then x R z
8	A kind of expression where the operator is present between two operands called _____ expressions .	A. Postfix B. Infix C. Prefix D. None of the above
9	A simple sorting algorithm like selection sort or bubble sort have a wrostcase of	A. O(1) time because all lists take the same amount of time to sort B. O(n) time because it has to perform n swaps to order the list. C. O(n^2) time because sorting 1 element takes O(n) time - After 1 pass through the list, either of these algorithms can guarantee that 1 element is sorted. D. O(n^3) time, because the worst case has really random input which takes longer to sort.
10	A complete binary tree of height 3 has between _____ nodes.	A. 8 to 14 B. 8 to 15 C. 8 to 16 D. 8 to 17
11	A binary tree of N nodes has _____	A. Log_{10}N Levels B. Log_2 N levels C. N/2 Levels D. N X2 Levels
12	The _____ method of list will position the currentNode and lastCurrentNode at the start of the list.	A. Remove B. Next C. Start D. Back
13	If both pointers of the node in a binary trees are NULL then it will be a	A. Inner node B. Leaf node

14	Each node in a double link list has ,	A. 1 pointer B. 2 pointer C. 3 pointer D. 4 pointers
15	Which of the following heap method increase the value of key at position „p" by the amount „delta"?	A. increaseKey(p,delta) B. decreaseKey(p,delta) C. preculateDown(p,delta) D. remove(p,delta)
16	Which of the following statements is correct property of binary trees?	A. A binary tree with N internal nodes has N+1 internal links B. A binary tree with N external nodes has 2N internal nodes C. A binary tree with N internal nodes has N+1 external nodes. D. None of above statement is a property of the binary tree
17	_____ only removes items in reserve order as they were entered	A. Stack B. Queue C. Both of these D. None of these
18	Merge sort makes two recursive calls,which statement is true after these recursive calls,finish but before the merge step?	A. Elements in the first half of the array are less than or equal to elements in the second half of the array B. None of the given options C. The array elements form a heap. D. Elements in the second half of the array are less than or equal to elements in the first half of the array
19	In an array list the current element is	A. the first element B. the middle element C. the last element D. The element where the current pointer points to
20	A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its _____ successor	A. levelorder B. Preorder C. Inorder D. Postorder
21	Suppose you implement a heap (with the largest element on top) in an array. Consider the different arrays below, determine the one that cannot possibly be a heap:	A. 7 6 5 4 3 2 1 B. 7 3 6 2 1 4 5 C. 7 6 4 3 5 2 1 D. 7 3 6 4 2 5 1
22	The arguments passed to a function should match in number, type and order with the parameters in the function definition.	A. True B. False C. both
23	Consider te following array 23 15 5 12 40 10 7 After the first pass of a particular algorithm, the array looks like 15 5 12 23 10 7 40 Name the algorithm used	A. Heap sort B. Selection sort C. Insertion sort D. Bubble sort
24	Which of the following is not true regarding the maze generation ?	A. Randomly remove walls until the entrance and exit cells are in same set B. Removing a wall is the same as doing union of operation C. Removing a randomly chosen wall if the cell is separatedare already in the same set D. Do not remove a randomly chosen wall if the cells it separates are already in the same set.
25	A complete binary tree of height 3 has between _____ node	A. 8-14 B. 8-15 C. 8-16 D. 8-17
26	Which of the following statement is NOT correct?	A. In linked list the elements are necessarily to be contiguous B. In the linked list the elements may locate at far positions in the memory C. in the linked list each elements also has he address of the elements next to it D. In an array the elements are contiguous

A. The left pointer of dummy node

27	Which of the following statement is true about dummy node of threaded binary tree	A. The left pointer of dummy node points to the itself while the right pointer points to the root of tree. B. The left pointer of dummy node points to the root node of the tree while the right pointer points itself i.e. to dummy node C. The left pointer of dummy node points to the root node of the tree while the right pointer is always NULL D. The right pointer of dummy node points to the itself while the left pointer is always NULL
28	If there are N elements in an array then the number of maximum steps needed to find an elements using Binary Search is _____	A. N B. N^2 C. Nlog2N D. $\log_2 N$
29	Use of binary tree in compression of data is known as _____	A. Traversal B. Heap C. Union D. Huffman encoding
30	What requirement is placed on an array, so that binary search may be used to locate an entry?	A. The array elements must form a heap. B. The array must have at least 2 entries C. The array must be sorted. D. The array"s size must be a power of two.
31	Which one of the following is valid postfix expression?	A. ab+c*d- B. abc*+d- C. abc+*d- D. abc*)+d-
32	Suppose currentNode refers to a node in a linked list(using the Node class with member variables called data and next node),What statement changes currentNode so that it refers to the next node?	A. currentNode ++; B. currentNode = nextNode; C. currentNode += nextNode; D. currentNode = currentNode->nextNode;
33	If numbers 5,222,4,48 are inserted in queue,which one will be removed first?	A. 48 B. 4 C. 222 D. 5
34	Which of the following statement is correct?	A. A Threaded Binary Tree is a binary tree in which every node that does not have a left child has a THREAD (in actual sense, a link) to its INORDER successor. B. A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its PREOREDR successor. C. A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its INORDER successor. D. A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its POSTORDER successor.
35	If the bottom level of a binary tree is NOT completely filled, depicts that the tree is NOT a	A. Expression tree B. threaded binary tree C. complete binary tree D. perfectly complete binary tree
36	In a selection sort of n element ,how many times the swap function is called the execution of the algorithm?	A. n-1 B. 0 C. n log n D. 1
37	The maximum number of external nodes for a binary tree of height H is	A. 2^h B. 2^h+1 C. 2^h+2 D. 2^h+3
38	I have implemented the queue with a circular array. If data is a circular array of CAPACITY elements, and last is an index into that array, what is the formula for the index after last?	A. (last % 1) + CAPACITY B. last % (1 + CAPACITY) C. (last + 1) % CAPACITY D. last + (1 % CAPACITY)
		A. $\log_2(n+1)-1$

39	If a complete binary tree has n number of nodes then its height will be	B. 2ⁿ C. 2ⁿ-1
40	A complete binary tree of height ___ has node between 16 to 31.	A. 2 B. 3 C. 4 D. 5
41	A binary tree with 33 internal nodes has _____ links to internal nodes.	A. 31 B. 32 C. 33 D. 66
42	By using _____we avoid the recursive method of traversing a Tree, which makes use of stacks and consumes a lot of memory and time.	A. Binary tree only B. Threaded binary tree C. Heap data structure D. Huffman encoding
43	Which of the following statement is NOT true about find operation :	A. It is not a requirement that a find operation returns any specific name, just that finds on two elements return the same answer if and only if they are in the same set. B. One idea might be to use a tree to represent each set, since each element in a tree has the same root, thus the root can be used to name the set. C. Initially each set contains one element. D. initially each set contains one element and it does not make sense to make a tree of one node only.
44	If both pointers of the node in a binary tree are NULL then it will be a/an _____ .	A. Inner node B. Leaf node C. Root node D. None of the given options
45	_____ is a data structure that can grow easily dynamically at run time without having to copy existing elements.	A. Array () B. List C. Both of these D. None of these
46	Consider a min heap, represented by the following array: 10,30,20,70,40,50,80,60 After inserting a node with value 31.Which of the following is the updated min heap?	A. 10,30,20,31,40,50,80,60,70 B. 10,30,20,70,40,50,80,60,31 C. 10,31,20,30,40,50,80,60,31 D. 31,10,30,20,70,40,50,80,60
47	By using _____ we avoid recursive method of traversing a tree,which makes use of stacks and consumes a lot of memory and time.	A. Binary tree only B. Threaded binary tree C. Heap data structure D. Huffman encoding
48	If there are 23 external nodes in a binary tree then what will be the no. of internal nodes in this binary tree?	A. 23 B. 24 C. 21 D. 22 (n-1)
49	In an array we can store data elements of different types	A. True B. False C. Not sure
50	Which traversal gives a decreasing order of elements in a heap where the max element is stored at the top?	A. post-order B. level -order C. in order D. none of the above
51	it will be efficient to place stack elements at the start of the list because insertion and removal take _____time.	A. Variable B. Constant C. Inconsistent D. None of the above E.
52	Let heap stored in an array as H = [50, 40, 37, 32, 28, 22, 36, 13]. In other words, the root of the heap contains the maximum element. What is the result of deleting 40 from this heap	A. [50,32, 37,13, 28, 22, 36] according to max heap property B. [37, 28, 32, 22, 36, 13] C. [37, 36, 32, 28, 13, 22] D. [37, 32, 36, 13, 28, 22]
53	Compiler uses which one of the following to evaluate a mathematical equation	A. Binary Tree B. Binary Search Tree C. Parse Tree D. AVL Tree
54	A queen is a data structure where elements are,	A. inserted at the front and removed from the back B. inserted and removed from the top. C. inserted at the back and removed

		from the front. D. inserted and removed from both ends.
55	Here is an array of ten integers: 5 3 8 9 1 7 0 2 6 4 The array after the FIRST iteration of the large loop in a selection sort (sorting from smallest to largest).	A. 0 3 8 9 1 7 5 2 6 4 B. 2 6 4 0 3 8 9 1 7 5 C. 2 6 4 9 1 7 0 3 8 5 D. 0 3 8 2 6 4 9 1 7 5
56	Suppose that a selection sort of 100 items has completed 42 iterations of the main loop. How many items are now guaranteed to be in their final spot (never to be moved again)?	A. 21 B. 41 C. 42 D. 53
57	Consider a min heap, represented by the following array: 11,22,33,44,55 After inserting a node with value 66.Which of the following is the updated min heap?	A. 11,22,33,44,55,66 B. 11,22,33,44,66,55 C. 11,22,33,66,44,55 D. 11,22,66,33,44,55
58	Suppose we are sorting an array of eight integers using quick sort ,and we have just finished the first partitioning with the array looking like this 2 5 1 7 9 12 11 10 Which statement is correct?	A. The pivot could be either the 7 or the 9. B. The pivot could be the 7, but it is not the 9. C. The pivot is not the 7, but it could be the 9 D. Neither the 7 nor the 9 is the pivot.
59	If there are 56 internal nodes in a binary tree then how many external nodes this binary tree will have?	A. 54 B. 55 C. 56 D. 57
60	A binary tree with N internal nodes has _____ links ,links to internal node and _____links to external	A. N+1, 2N, N-1 B. N+1, N-1, 2N C. 2N, N-1, N+1 D. N-1, 2N, N+1
61	Which of the following is a property of binary tree?	A. A binary tree of N external nodes has N internal node. B. A binary tree of N internal nodes has N+ 1 external node C. A binary tree of N external nodes has N+ 1 internal node D. A binary tree of N internal nodes has N- 1 external node.
62	If there are N elements in an array then the number of maximum steps needed to find an element using Binary Search is _____ .	A. N B. N^2 C. $N\log_2 N$ D. $\log_2 N$
63	Which of the following is a non linear data structure?	A. Linked List B. Stack C. Tree D. Queue
64	Huffman encoding uses _____ tree to develop codes of varying lengths for the letters used in the original message	A. Linked List B. Stack C. Queue D. Binary tree
65	While joining nodes in the building of Huffman encoding tree if there are more nodes with same frequency, we choose the nodes _____.	A. Randomly B. That occur first in the text message C. That are lexically smaller among others D. That are lexically greater among others
66	The maximum number of external nodes for a binary tree of Height H is _____	A. 2^h B. 2^h+1 C. 2^h+2 D. 2^h+3
67	Which of the following algorithm is most widely used due to its good average time	A. Bubble sort B. insertion sort C. quick sort D. merge sort
68	Suppose we are sorting an array of eight integers using quick sort, and we have just finished the first partitioning with the array looking like this: 2 5 1 7 9 12 11 10 Which statement is correct?	A. The pivot could be either the 7 or the 9 B. The pivot could be the 7, but it is not the 9. C. The pivot is not the 7, but it could be the 9. D. Neither the 7 nor the 9 is the pivot.
		A. A binary tree with internal nodes has N+1 internal links

69	Which of the following statement is correct property of binary trees?	B. A binary tree with N external nodes has 2N internal nodes. C. A binary tree with N internal nodes has N+ 1 external node. D. None of above statement is a property of the binary tree.
70	Which of the following is NOT a correct statement about Table ADT.	A. n a table, the type of information in columns may be different. yes B. A table consists of several columns, known as entities. C. The row of a table is called a record. D. A major use of table is in databases where we build and use tables for keeping information.
71	A complete binary tree of height _____ has nodes between 16-31.	A. 2 B. 3 C. 4 D. 5
72	The definition of Transitivity property is	A. For all element x member of S, x R x B. For all elements x and y, x R y if and only if y R x C. For all elements x, y and z, if x R y and y R z then x R z D. For all elements w, x, y and z, if x R y and w R z then x R z
73	Searching of an element in an AVL tree take minimum _____ time (where n is number of nodes in AVL tree)	A. $Log_2(n+1)$ B. $Log_2(n+1)$ -1 C. 1.44 $Log_2 n$ D. 1.66 $Log_2 n$
74	A binary tree with N internal nodes has _____ links, _____ links to internal nodes and _____ links to external nodes	A. N+1, 2N, N-1 B. N+1, N-1, 2N C. 2N, N-1, N+1 D. N-1, 2N, N+1
75	In a perfectly balanced tree the insertion of a node needs _____ .	A. One rotation B. Two rotations C. Rotations equal to number of levels D. No rotation at all
76	Select the FALSE statement binary tree.	A. Every binary tree has at least one node. B. Every non-empty tree has exactly one root node. C. Every node has at most two children. D. Every non-root node has exactly one parent.
77	Which of the following statement statement is true about dummy node of threaded binary type?	A. This dummy node never has a value B. This dummy node has always some dummy values C. This dummy node has either no value or some dummy value D. This dummy node has always some integer value
78	Consider the following postfix expression S and the initial values of the variable, S = A B - C + D E F - + ^ Assume that A=3, B=2, C=1, D=1, E=2, F=3 What would be the final output of the stack?	A. 1 B. 2 C. 0 D. -1
79	While building Huffman encoding tree the new node that is the result of joining two nodes has the frequency.	A. Equal to the small frequency B. Equal to the greater C. Equal to the sum of the two frequencies D. Equal to the difference of the two frequencies
80	Consider te following array 23 15 5 12 40 10 7 After the first pass of a particular algorithm, the array looks like 15 12 23 10 7 40 Name the algorithm used	A. Heap sort B. Selection sort C. insertion sort D. Bubble sort
81	Which of the following statement is true about find(x) operation :	A. A find(x) on element x is performed by returning exactly the same node that is found. B. A find(x) on element x is performed by returning the root of the tree containing x. C. A find(x) on element x is performed

82	Consider a min heap, represented by the following array: 3,4,6,7,5 After calling the function deleteMin().Which of the following is the updated min heap?	A. 4,6,7,5 B. 6,7,5,4 C. 4,5,6,7 D. 4,6,5,7
83	If a complete binary tree has height h then its no. of nodes will be,	A. Log (h) B. $2^h+1 - 1$ C. Log (h) - 1 D. $2^h - 1$
84	Union is a _____ time operation	A. Constant B. Polynomial C. Exponential D. None of the above
85	The difference between the binary tree and a binary search tree is that:	A. a binary search tree has two children per node whereas a binary tree can have none, one, or two children per node B. in binary search tree nodes are inserted based on the values they contain C. in binary tree nodes are inserted based on the values they contain D. none of these
86	Here is a small function definition: void f(int i, int &k) { i = 1; k = 2; } Suppose that a main program has two integer variables x and y, which are given the value 0. Then the main program calls f(x,y); What are the values of x and y after the function f finishes?	A. Both x and y are still 0. B. Both x and y are still 0. C. x is still 0, but y is now 2. D. x is now 1, and y is now 2.
87	Consider the following paragraph with blanks. A …………... is a linear list where …………… and ………… take place at the same end . This end is called the …….……….. What would be the correct filling the above blank positions?	A. (i) queue (ii) insertion (iii) removals (iv) top B. (i) stack (ii) insertion (iii) removals (iv) bottom C. (i) stack (ii) insertion (iii) removals (iv) top D. (i) tree (ii) insertion (iii) removals (iv) top
88	Suppose A is an array containing numbers in increasing order, but some numbers occur more than once when using a binary search for a value, the binary search always finds _____	A. the first occurrence of a value. B. the second occurrence of a value C. may find first or second occurrence of a value. D. None of the given options
89	If there are N internal nodes in a binary tree then what will be the number of the no,of external node in the binary tree?	A. N-1 B. N C. N+1 D. N+2
90	If there are N elements in an array then the number of maximum steps needed to find an element using Binary Search is _____	A. N B. N^2 C. $N\log_2 n$ D. $\log_2 N$
91	Suppose we have a hash table whose hash function is "n% 12",if the number 35 is already in the hash table which of the following numbers would cause a collision ?	A. 144 B. 145 C. 143 D. 148
92	Here is a small function definition: void f(int i, int &k) { i = 1; k = 2; } Suppose that a main program has two integer variables x and y, which are given the value 0. Then the main program calls f(x,y); What are the values of x and y after the function f finishes?	A. Both x and y are still 0. B. x is now 1 but y is still 0 C. x is still 0,but y is now 2 D. x is now1 1 and y is now 2
93	Binary Search is an algorithm of searching, used with the _____ data	A. Sorted B. Unsorted C. Heterogeneous D. Random
94	Every AVL is	A. Binary tree B. Complete tree C. None of these D. Binary Search tree
	A complete binary tree us a tree that is _____ filled with the possible exception of the bottom	A. partially B. completely

95	A complete binary tree as a tree that is ___ filled with the possible exception of the bottom level.	C. incompletely D. partly
96	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 ?	A. Arrays B. LinkLists C. Binary Search Trees D. All of the given options
97	There is/are _____ case/s for rotation in an AVL tree,	A. 1 B. 2 C. 3 D. 4
98	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?	A. Neither changes B. only front pointer charges C. Only rear pointer changes. D. Both change. Since it is an empty queue the front and rear are initialize to -1, so on insertion both the pointers will change and point to 0.
99	Which of the given option is NOT a factor in Union by Size:	A. Maintain sizes (number of nodes) of all trees, and during union. B. Make smaller tree, the subtree of the larger one C. Make the larger tree, the subtree of the smaller one. D. Implementation: for each root node i, instead of setting parent[i] to -1, set it to -k if tree rooted at i has k nodes
100	Suppose A is an array containing numbers in increasing order, but some numbers occur more than once when using a binary search for a value, the binary search always finds _____	A. the first occurance of value B. the second occurrence of a value C. may find first or second occurrence of a value. D. None of the given options
101	In complete binary tree the bottom level is filled from_____	A. Left to right B. Right to left C. Not filled at all D. None of the given option
102	Merge sort and quicksort both fail into the same category of sorting algorithms,What is this category ?	A. O(nlogn) sorts B. Interchange sort C. Average time is quadratic D. None of the given options.
103	In sequential access data structure ,accessing any element in the data structure takes different amount of time.Tell which one of the following is sequential access data structure.	A. Arrays B. Lists C. Both of these D. None of these
104	Binary Search is an algorithm of searching ,used with the _____ data .	A. Sorted B. Unsorted C. Heterogeneous D. Heterogeneous
105	Which of the following is not an example of equivalence relation:	A. Electrical Connectivity B. Set of people C. <= relation D. Set of pixels
106	The data of the problem is of 2 GB and the hard disk is of 1 GB capacity,to solve this problem we should	A. use better data structure B. Increase the hard disk space C. Use the better algorithm D. Use as much data as we can store on the hard disk
107	Consider the following infix expression: x − y * a + b / c Which of the following is a correct equivalent expression(s) for the above?	A. x y -a * b +c / B. x *y a - b c / + C. x y a * - b c / + D. x y a * - b/ + c
108	We are given N items to build a heap ,this can be done with _____ successive inserts.	A. N-1 B. N C. N+1 D. N+2
109	If you know the size of the data structure in advance, i.e., at compile time, which one of the following is a good data structure to use.	A. Array B. List C. Both D. None of the above
110	Consider te following array 23 15 5 12 40 10 7 After the first pass of a particular algorithm, the array looks like 15 5 12 23 10 7 40 Name the algorithm used	A. Heap sort B. Selection sort C. Insertion sort D. Bubble sort (
		A. Stack

111	Which one is a self-referential data type?	A. Stack B. Queue C. Link list D. All of these
112	Suppose you implement a Min heap (with the smallest element on top) in an array. Consider the different arrays below; determine the one that cannot possibly be a heap:	A. 16, 18, 20, 22, 24, 28, 30 B. 16, 20, 18, 24, 22, 30, 28 C. 16, 24, 18, 28, 30, 20, 22 D. 16, 24, 20, 30, 28, 18, 22
113	A binary tree with 24 internal node has _____ external node.	A. 22 B. 23 C. 48 D. 25
114	Which one of the following is TRUE about recursion ?	A. Recursion extensively use stack memory B. Threaded Binary Trees use the concept of recursion. C. Recursive function calls consume a lot of memory. D. Iteration is more efficient than iteration.
115	Which one of the following is NOT the property of equivalence relation	A. Reflexive B. Symmetric C. Transitive D. Associative
116	Which of the following method is helpful in creating the heap at once?	A. insert B. add C. update D. preculateDown
117	If there are 56 internal node in a binary tree then how many external nodes this binary tree will have ?	A. 54 B. 55 C. 56 D. 57
118	Double link list is always has one NULL pointer	A. True B. False C. Not Sure
119	Consider a min heap, represented by the following array: 3,4,6,7,5,10 After inserting a node with value 1.Which of the following is the updated min heap?	A. 3,4,6,7,5,10,1 B. 3,4,6,7,5,1,10 C. 3,4,1,5,7,10,6 D. 1,4,3,5,7,10,6close to correct but correct ans is 1,4,3,7,5,10,6
120	In case of deleting a node from AVL tree,rotation could be prolong to the root node.	A. yes B. no C. not sure
121	What is the formula of approixation for the depth of a heap with n nodes?	A. log (base 2) of n B. The number of digits in n (base 10)e,g 145 has three digit C. The square root of n D. n
122	Which one of the following is TRUE about iteration?	A. Iteration extensively uses stack memory B. Threaded Binary Trees use the concept of iteration. C. Iterative function calls consumes a lot of memory. D. Recursion is more efficient than iteration.
123	Which of the following statement is NOT true about threaded binary tree?	A. Right thread of the right-most node points to the dummy node B. Left thread of the left-most node points to the dummy node. C. The left pointer of dummy node points to the root node of the tree D. Left thread of the right-most node points to the dummy node.