Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021

Course Name - –Data Structures
Course Code - BCA201

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Answer all the questions. Each question carry one mark.

9. 1. The condition _____ indicate the queue is empty.

Mark only one oval.

- [ ] Front=Null
- [ ] Null=Front
- [ ] Front=Rear
- [ ] Rear=Null

10. 2. A binary search tree is generated by inserting in order the following integers: 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24 The number of the node in the left sub-tree and right sub-tree of the root, respectively, is

Mark only one oval.

- (4, 7)
- (7, 4)
- (8, 3)
- (3, 8)

11. 3. One can convert a binary tree into its mirror image by traversing it in

Mark only one oval.

- in-order
- pre-order
- post-order
- any order

12. 4. Which of the following ways is a pre-order traversal?

Mark only one oval.

- Root->left sub tree-> right sub tree
- Root->right sub tree-> left sub tree
- right sub tree-> left sub tree->Root
- left sub tree-> right sub tree->Root

13. 5. The memory address of the first element of an array is called

Mark only one oval.

- base address
- floor address
- foundation address
- first address

14. 6. Which is the pointer associated with the stack?

Mark only one oval.

- FIRST
- FRONT
- TOP
- REAR

15. 7. In a full binary tree if there are L leaves, then total numbers of nodes N are?

Mark only one oval.

- N = 2*L
- N = L + 1
- N = L − 1
- N = 2*L− 1

16. 8. The element that is going to be searched in a list is called _____.

Mark only one oval.

- Key
- Item
- Table
- File

17. 9. The depth of a complete binary tree with 'n nodes is (log is to be base two)

Mark only one oval.

- log (n+1)-1
- log(n)
- log (n-1) + 1
- log(n) + 1

18. 10. Which of the following is not an in-place sorting algorithm?

Mark only one oval.

- Insertion sort
- Selection sort
- Bubble sort
- Merge sort

19. 11. How is Data in a queue accessed?

Mark only one oval.

- First in First out
- First in Last out
- Last in First out
- Last in Last out

20. 12. The number of edges from the node to the deepest leaf is called _____ of the tree.

Mark only one oval.

- Lower bound
- One that is sandwiched between the two bounds
- Upper bound
- None of these

21. 13. Which of the following algorithm pays the least attention to the ordering of the elements in the input list?

Mark only one oval.

- Insertion sort
- Selection sort
- Quick sort
- Merge sort

22. 14. If the given input array is sorted or nearly sorted, which of the following algorithm gives the best performance?

Mark only one oval.

- Insertion sort
- Selection sort
- Quick sort
- Merge sort

23. 15. To obtain a prefix expression, which of the tree traversals is used?

Mark only one oval.

- Level-order traversal
- Pre-order traversal
- Post-order traversal
- In-order traversal

24. 16. Which of the following traversal techniques lists the elements of a binary search tree in ascending order ?

Mark only one oval.

- Pre-order
- Post-order
- In order
- None of these

25. 17. _____is a pile in which items are added at one end and removed from the other.

Mark only one oval.

- List
- Queue
- Stack
- Array

26. 18. Which of the following is not an application of binary search? a. b. c. d.

Mark only one oval.

- To find the lower/upper bound in an ordered sequence
- Union of intervals
- Debugging
- To search in unordered list

27. 19. Which data structure allows deleting data elements from front and inserting at the rear?

Mark only one oval.

- Stack
- Queue
- List
- None of these

28. 20. Which of the following is not an advantage of optimized bubble sort over other sorting techniques in case of sorted elements?

Mark only one oval.

- It is faster
- Consumes less memory
- Detects whether the input is already sorted
- Consumes less time

29. 21. What is the advantage of recursive approach than an iterative approach?

Mark only one oval.

- Consumes more memory
- Consumes less memory
- Less code and easy to implement
- More code has to be written

30. 22. If n elements are sorted in a balanced binary search tree. What would be the asymptotic complexity to search a key in the tree?

Mark only one oval.

- O(1)
- O(n)
- O(log n)
- O(n log n)

31. 23. Finding the location of a given item in a collection of items is called

Mark only one oval.

- Discovering
- Finding
- Searching
- Mining

32. 24. _____ is a collection of elements such that each element has been assigned a processing priority.

Mark only one oval.

- Priority queue
- Procedure queue
- Main queue
- Interrupt queue

33. 25. Binary Search can be categorized into which of the following?

Mark only one oval.

- Brute Force technique
- Divide and conquer
- Greedy algorithm
- Dynamic programming

34. 26. The maximum number of binary trees that can be formed with three unlabeled nodes is:

Mark only one oval.

- 1
- 6
- 5
- 4

35. 27. The recurrence relation that arises in relation with the complexity of binary search is:

Mark only one oval.

- T(n) = 2T(n/ 2) + k , where k is constant
- T(n) = T(n / 2) + k , where k is constant
- T(n) = T(n / 2) + log n
- T(n) = T(n / 2) + n

36. 28. Identify the data structure which allows deletions at both ends of the list but insertion at only one ending.

Mark only one oval.

- Input-restricted deque
- Output-restricted deque
- Priority Queues
- None of these

37. 29. Deletion operation is done using _____in a queue.

Mark only one oval.

- Front
- Rear
- Top
- List

38. 30. The no of external nodes in a full binary tree with n internal nodes is?

Mark only one oval.

- 1
- n
- n+1
- 2n

39. 31. If a key is found in a list that is called _____ type of search.

Mark only one oval.

- unsuccessful
- successful
- partial success
- partial unsuccessful

40. 32. A binary tree is generated by inserting in order the following integers: 50, 15, 62, 5, 20,58, 91, 3,8,37, 60, 24 The number of nodes in the left and right of the root respectively is:

Mark only one oval.

- (4,7)
- (7,4)
- (6,3)
- (3,6)

41. 33. What is the output of the following code snippet? #includevoid main() {int arr[5]={1,2,3,4,5}; int*ptr=arr;printf("%d",*ptr); }

Mark only one oval.

- 2
- 5
- 1
- 4

42. 34. If the array is already sorted, which of these algorithms will exhibit the best performance

Mark only one oval.

- Merge sort
- Quick Sort
- Insertion sort
- None of these

43. 35. What is a complete binary tree?

Mark only one oval.

- ◯ Each node has exactly zero or two children
- ◯ A binary tree, which is completely filled, with the possible exception of the bottom level, which is filled from right to left
- ◯ A binary tree, which is completely filled, with the possible exception of the bottom level, which is filled from left to right
- ◯ A tree In which all nodes have degree 2

44. 36. In _____ search start at the beginning of the list and check every element in the list.

Mark only one oval.

- ◯ Linear search
- ◯ Binary search
- ◯ Hash Search
- ◯ Binary Tree search

45. 37. What is the worst case time complexity for search, insert and delete operations in a general Binary Search Tree?

Mark only one oval.

- ◯ O(n) for all
- ◯ O(log n) for all
- ◯ O(log n) for search and insert, and O(n) for delete
- ◯ O(log n) for search, and O(n) for insert and delete

46. 38. Which type of traversal of binary search tree outputs the value in sorted order?

Mark only one oval.

- Pre-order
- In-order
- Post-order
- None

47. 39. Which of the following require additional space to sort?

Mark only one oval.

- Merge sort
- Bubble sort
- Selection sort
- Insertion sort.

48. 40. Which is / are application(s) of stack?

Mark only one oval.

- Function call
- Large number arithmetic
- Evaluation of arithmetic expression
- All of these

49. 41. Which search technique is better for sorted elements?

Mark only one oval.

- Linear
- Binary
- Both linear and binary
- None of these

50. 42. A _____ is a data structure that organizes data similar to a line in the supermarket, where the first one in line is the first one out.

Mark only one oval.

- Stacks linked list
- Both of them
- Neither of them
- queue linked list

51. 43. Which search technique is better?

Mark only one oval.

- Linear
- Binary
- all of these
- none of these

52. 44. When a binary tree is converted in to an extended binary tree, all the nodes of a binary tree in the external node becomes

Mark only one oval.

- Root node
- External node
- Internal nodes
- None of these

53. 45. A binary search tree whose left subtree and right subtree differ in height by at most 1 unit is called

Mark only one oval.

- Lemma tree
- Redblack tre
- AVL tree
- None of these.

54. 46. What is a full binary tree?

Mark only one oval.

- Each node has exactly zero or two children
- Each node has exactly two children
- All the leaves are at the same level
- Each node has exactly one or two children

55. 47. Finding the location of the element with a given value is:

Mark only one oval.

- Traversal
- Search
- Sort
- None of these

56. 48. The complexity of Bubble sort algorithm is

Mark only one oval.

- O(n)
- O(log n)
- O(n^2)
- O(n log n)

57. 49. What is the time complexity of uniform binary search?

Mark only one oval.

- O(n log n)
- O(log n)
- O(n)
- O(n^2)

58. 50. If n numbers are to be sorted in ascending order in O(nlogn) time, which of the following tree can be used

Mark only one oval.

- Binary tree
- Binary search tree
- Max -heap
- Min -heap

59. 51. Consider a sorted array of n numbers. What would be the time complexity of the best known algorithm to find a pair 'a' and 'b' such that |a-b| = k , k being a positive integer.

Mark only one oval.

- O(n)
- O(n log n)
- O(log n)
- None of these

60. 52. The dummy header in the linked list contains

Mark only one oval.

- First record of the actual data
- Last record of the actual data
- Pointer to the last record of the actual data
- None of these.

61. 53. Before inserting into the stack one must check the condition _____

Mark only one oval.

- Overflow
- Underflow
- Maximum elements
- Existing elements

62. 54. In a full binary tree, every internal node has exactly two children. A full binary tree with 2n+1 nodes contains

Mark only one oval.

- n leaf node
- n internal nodes
- n-1 leaf nodes
- n-1 internal nodes

63. 55. In linear search with array, how many comparisons are needed in best case?

Mark only one oval.

- 0
- 1
- n
- n/2

64. 56. Which of the following traversal techniques lists the elements of a binary search tree in ascending order ?

Mark only one oval.

- Pre-order
- Post-order
- In order
- None of these

65. 57. If two strings are identical, the strcmp()function returns ___

Mark only one oval.

- 0
- 1
- -1
- True

66. 58. The retrieval of items in a stack is _____ operation.

Mark only one oval.

- Push
- Pop
- Retrieval
- Access

67. 59. In a full binary tree if number of internal nodes is I, then number of leaves L is?

Mark only one oval.

- L = 2*I
- L = I + 1
- L = I − 1
- L = 2*I − 1

68. 60. What is the space complexity of an array having n elements?

Mark only one oval.

- O(n)
- O (n log n)
- O (log n)
- O(1)

69. 61. A binary search tree is generated by inserting in order the following integers: 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24 The number of the node in the left sub-tree and right sub-tree of the root, respectively, is

Mark only one oval.

- (4, 7)
- (7, 4)
- (8, 3)
- (3, 8)

70. 62. Choose the recursive formula for the Fibonacci series.(n>=1)

Mark only one oval.

- F(n) = F(n+1) + F(n+2)
- F(n) = F(n) + F(n+1)
- F(n) = F(n-1) + F(n-2)
- F(n) = F(n-1) − F(n-2)

71. 63. What is an external sorting algorithm?

Mark only one oval.

- Algorithm that uses tape or disk during the sort
- Algorithm that uses main memory during the sort
- Algorithm that involves swapping
- Algorithm that are considered ‘in place’

72. 64. Which of the following is the level of implementation of data structure?

Mark only one oval.

- Application level
- Abstract level
- Implementation level
- All of these

73. 65. Searching techniques are classified into_____types.

Mark only one oval.

- 2
- 4
- 5
- None of these

74. 66. The property of binary tree is

Mark only one oval.

- The first subset is called left subtree
- The second subtree is called right subtree
- The root cannot contain NULL
- The right subtree can be empty

75. 67. Degree of a leaf node is

Mark only one oval.

- 0
- 1
- 2
- 3

76. 68. _____ is very useful in situations when data have to stored and then retrieved in reverse order.

Mark only one oval.

- Stack
- Queue
- List
- Link list

77. 69. Which of the following is not a comparison sort?

Mark only one oval.

- Insertion sort
- Bucket sort
- Radix Sort
- Counting sort

78. 70. Any node is the path from the root to the node is called

Mark only one oval.

- Successor node
- Ancestor node
- Internal node
- None of these