قائمة الاسئلة

امتحان نهاية الفصل الدراسي الثاني - للعام الجامعي 1446 هـ - الموافق -2025/2024مـكلية الحاسوب وتكنولوجيا المعلومات :: هياكل البيانـ

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1) In a binary tree, the maximum number of nodes at level L is
   1) + $2^{L-1}$
   2) - $2^{(L+1)}$
   3) - $2^{(L+1)} - 1$
   4) - No correct answer
2) The traversal method used to retrieve the nodes of a binary tree in ascending order is
   1) - Preorder
   2) + Inorder
   3) - Postorder
   4) - No correct answer
3) Which of the following is a disadvantage of using arrays?
   1) - Random access
   2) - Contiguous memory allocation
   3) + Fixed size
   4) - No correct answer
4) The postfix notation for the expression (A + B) * C is
   1) + A B + C *
   2) - A + B * C
   3) - + A B C
   4) - C * A + B
5) Which of the following is true about a stack implemented using an array?
   1) - It can grow dynamically without limits
   2) + It may lead to stack overflow if not managed properly
   3) - It allows random access to elements
   4) - No correct answer
6) The primary property of a queue is
   1) - Last In, First Out (LIFO)
   2) - Random access
   3) + First In, First Out (FIFO)
   4) - No correct answer
7) The primary advantage of using a circular queue over a linear queue is
   1) - It uses less memory
   2) - It supports random access
   3) + It allows for efficient use of space
   4) - It simplifies the implementation
8) In a circular queue, what happens when the rear pointer reaches the end of the array
   1) - It cannot insert new elements
   2) - It resets to zero

3) + It wraps around to the front of the array
4) - It raises an overflow error

9) How can you find the length of a single linked list?
1) - By accessing the last node
2) + By traversing the list and counting nodes
3) - It cannot be determined
4) - By using a recursive function

10) If you want to delete the last node of a single linked list, what is required?
1) - Traverse the list to find the last node
2) - Keep track of the previous node during traversal
3) + Both A and B
4) - No correct answer

11) If you want to delete a node in a double linked list, what information do you need?
1) - Only the node to be deleted
2) - The value of the node to be deleted
3) + The node and its predecessor or successor
4) - No correct answer

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4) - No correct answer

13) The types of Queue:
1) - Linear Q only
2) - Linear Q, Circular Q, and Priority Q only
3) - Linear Q and Circular Q only
4) + No correct answer

14) Assuming that array A is a triangular and A[1,1] is stored at location = 003, the location of A[i,j] is given by:
1) - ((i-003) * i) + j
2) - ((003-i) * i)/2 + j
3) + ((i-003) * i)/2 + j
4) - No correct answer

15) The polynomial equation can be represented with linked list as follows:
1) - struct polynomial
{ int coefficient;char exponent;struct polynomial *next} *P;
2) + struct polynomial
{ int coefficient;int exponent;struct polynomial *next} *P;
3) - struct polynomial
{ int coefficient;int exponent;struct polynomial next} *P;
4) - struct polynomial
{ int coefficient;int exponent;struct polynomial *next} P;

16) The difference between static and dynamic data structure is:
1) + Implementation is easy in static, but implementation is difficult in Dynamic
2) - Data in dynamic are arranged in sequential manner, vice versa in static data
3) - Both will fragment the memory
4) - No correct answer

17) The advantages of single linked list :
1) + Save memory space and easy to maintain

2) - Easy to jump directly to the end of list from the beginning
3) - It is possible to go backwards through the list
4) - No correct answer

18) The operations performed in stack
1) - Only Push and Pop
2) - Push, Pop, and Sort
3) - Push, Pop, and Search
4) + No correct answer

19) The ADT of the Dynamic Stack is:
1) - struct DStack {int Top; float items[100]} DS;
2) - struct DStack {char Top; float items[100]} *DS;
3) + struct DStack {int Data; struct DStack * link} *Top;
4) - No correct answer

20) Suppose you insert 3, 7, 2, and 5 into a queue. Then you remove the last inserted item. Which items are left on the queue?
1) - 3, 7, 2
2) - 5
3) + Empty queue
4) - No correct answer

21) Comparing between the indicators of Stack & Queue during adding an item:
1) - Top will be increased, while Rear will be decreased.
2) - both Top and Front will be increased.
3) - both Top and Rear will be decreased.
4) + No correct answer

22) Given the Postfix expression: 3 5 4 7 6 - * + * , the Infix is
1) - 7 * (6 + ( 4 * (3 - 5 )))
2) + 3 * (4 + ( 5 * (7 - 6 )))
3) - (3 * (5 + ( 4 * (7 - 6 ))))
4) - No correct answer

23) Given the Prefix expression: * 2 + - 3 1 * 4 4 , the result is
1) - 0
2) - 11
3) + 36
4) - No correct answer

24) A complete binary tree, can have nodes at most
1) - $2^{L-1}$
2) - $2^{(L+1)}$
3) + $2^{(L+1)} - 1$
4) - No correct answer

25) To create an empty double linked list we write:
1) + DLL * f = NULL;

2) - DLL * f = " ";
3) - DLL * f = GetDNode();
4) - No correct answer

26) Suppose we use a recursive function PostorderVistRec(BT *P) to visit a binary tree having only root node, the number of POP(...) will be:
1) - 1
2) + 2
3) - 3
4) - No correct answer

27) The number of items in a circular Queue is given by
1) - Rear – Front + 1
2) - Front - Rear + 1
3) - Rear + Front - 1
4) + No correct answer

28) The number of items in a linear Queue is given by
1) - Rear % Max + 1
2) - Max % Rear + 1
3) - Using a flag variable say (int count)
4) + No correct answer

29) The prototype of the Search(…) function for a binary tree is written as:
1) - int Search(BT * root)
2) - int Search(BT * root, int key)
3) - BT * Search(BT * root)
4) + BT * Search(BT * root, int key)

30) The binary search tree (BST) has the following property:
1) - A new nodes are inserted into null links at the top of the tree
2) + The root node is less than the nodes in the right subtree and greater than the nodes in the left subtree
3) - The root node is greater than the nodes in the right subtree and less than the nodes in the left subtree
4) - No correct answer

31) The differences between a Doubly and Singly Linked List (DLL & SLL)
1) + In terms of memory usage, a SLL is more memory-efficient comparing with DLL
2) - A SLL is forward only, however, the DLL is a backward only
3) - Both are static only
4) - No correct answer

32) The different types of a graph are
1) + Directed and Undirected
2) - Linear and Circular
3) - Undirected and Linear
4) - No correct answer

33) The prototype of the Recurcive_Inorder(…) function to visit a binary tree is written as:
1) - int Recurcive_Inorder(BT * root)
2) - void Recurcive_Inorder(BT * root)
3) - void Recurcive_Inorder()
4) + No correct answer

34) Data structure (DS) can be defined as
1) - DS = Algorithm + Object
2) - DS = Program + Object

3) - DS = Algorithm + Array
4) + No correct answer

35) Queue can be defined as
1) - List of items for which insertions and deletion are made at one end called Top
2) - List of items for which insertions and deletion are made at one end called Rear
3) - List of items for which insertions are made at Front end and deletion are made at Rear end
4) + No correct answer

36) Stack can be defined as
1) - List of items for which Push and pop are made at one end called Front
2) - First In, First Out (FIFO)
3) - List of items for which Push are made at Front end and Pop are made at Rear end
4) + No correct answer