

Seat No. **2341**

QP-1784

Total No. of Pages : 3

OCT_NOV_2024 WINTER EXAMINATION

Bachelor of Computer Application(BCA) NEP 2.0

Sub. Name: Data Structure using C

Sub. Code: 109538/84100/94732/83376/91172

Day and Date: DECEMBER ,05-12-2024

Total Marks: 80

Time: 10:30 AM To 01:30 PM

Instructions: 1. Figures to the right indicate full marks

Special Inst.: 2) Que.No.1 and Que. No.8 are compulsory.

3) Attempt ANY THREE Questions from Que. No.2 to Que. No. 7.

Q1) Solve following MCQ.

[12]

- i. In a stack, if a user tries to remove an element from an empty stack it is called _____.
A. Underflow
B. Empty collection
C. Overflow
D. Garbage Collection
- ii. A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as _____.
A. Queue
B. Stack
C. Tree
D. Linked list
- iii. How many passes does an insertion sort algorithm consist of?
A. N
B. N-1
C. N+1
D. N*N
- iv. Which data structure is used for implementing recursion?
A. Queue
B. Stack
C. Array
D. List
- v. Which of the following step is taken after finding an element having value greater than the element being searched?
A. binary search takes place in the forward direction
B. binary search takes place in a backward direction

[1]

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- C. linear search takes place in the forward direction
D. linear search takes place in the backward direction
- vi. A variant of a linked list in which the last node of the list points to the first node of the list is?
A. Singly linked list
B. Doubly linked list
C. Circular linked list
D. Multiply linked list
- vii. Here is an infix expression: $4 + 3*(6*3-12)$. Suppose that we are using the usual stack algorithm to convert the expression from infix to postfix notation. The maximum number of symbols that will appear on the stack AT ONE TIME during the conversion of this expression?
A. 1
B. 2
C. 3
D. 4
- viii. A circular queue is implemented using an array of size 10. The array index starts with 0, front is 6, and rear is 9. The insertion of next element takes place at the array index.
A. 0
B. 7
C. 9
D. 10
- ix. Which of the following is the infix expression?
A. $A+B*C$
B. $+A*BC$
C. $ABC+*$
D. None of the above
- x. If the size of the stack is 10 and we try to add the 11th element in the stack then the condition is known as ____ .
A. Underflow
B. Garbage collection
C. Overflow
D. None of the above
- xi. In doubly linked lists, traversal can be performed?
A. Only in forward direction
B. Only in reverse direction
C. In both directions
D. None

- xii. The postfix form of the expression $(A + B) * (C * D - E) * F / G$ is?
- A. $AB + CD * E - FG / **$
 - B. $AB + CD * E - F ** G /$
 - C. $AB + CD * E - * F * G /$
 - D. $AB + CDE * - * F * G /$

- Q2) Write a program to accept ten integers and sort in descending order using selection sort. [16]
- Q3) What is a stack? Explain different operations on a stack with an algorithm. [16]
- Q4) What is a linear search? Write a program to demonstrate linear search with appropriate data. [16]
- Q5) Describe insertion and deletion operations on a doubly linked list. [16]
- Q6) Write a program to demonstrate a singly linked list. [16]
- Q7) What is a queue? Describe different operations on the circular queue. [16]
- Q8) Write notes on (Any Four). [20]
- a. Abstract Data Type [5]
 - b. Hashing [5]
 - c. Evaluation of postfix expression [5]
 - d. Merge sort [5]
 - e. Data and Information [5]
 - f. Prefix expressions [5]

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