



RC-3733

B. C. A. (Sem. III) (CBCS) Examination March / April - 2017 Data Structures

Time : Hours]

[Total Marks : 70

Instructions :

(1)

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| नीचे दशांशवत् निशानीवाणी विगनो उत्तरपदी पर अवश्य ब्रपनी. Fillup strictly the details of signs on your answer book. Name of the Examination : B. C. A. (SEM. 3) (CBCS) Name of the Subject : DATA STRUCTURES Subject Code No. 3 7 3 3 Section No. (1, 2,.....) NIL | Seat No. : <table border="1"> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table> | | | | | | | | |
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| | Student's Signature | | | | | | | | |

- (2) Write to the point.
- (3) Provide examples and diagrams wherever appropriate / necessary.
- (4) Figures to the right indicate full marks to the question.

1 Answer the following in short : (any seven) 14

- (1) Differentiate between linear and non-linear data structure.
- (2) Justify : Link List is a dynamic list.
- (3) Explain Output Restricted D-queue.
- (4) Give the polynomial representation of $2x^2 + 3xy + y^2 + z$.
- (5) What is pointer ? Explain with example.
- (6) Define complete binary tree with example.
- (7) Differentiate between singly link list and doubly link list.
- (8) Define graph with example.

- 2 Answer following in detail : (any two) 14
- (a) What is recursion ? Explain type of recursion. Write a program to find factorial of given number using recursion.
 - (b) Write an algorithm to convert infix expression into prefix expression.
 - (c) What is queue ? Write an algorithm to insert and delete an element in circular queue.
- 3 Answer following in detail : (any two) 14
- (a) Compare dynamic memory allocation and static memory allocation. Which is better ? Justify your answer with an example.
 - (b) What is link list ? Write an algorithm / program to insert a node at particular position in singly link list.
 - (c) Explain stack. Write an algorithm to perform various operations on stack.
- 4 Answer following in detail : (any two) 14
- (a) Explain AVL Tree in detail.
 - (b) What is searching ? Explain the difference between binary search and linear search. Also write an algorithm for linear search.
 - (c) What is sorting ? Explain which sorting technique is faster. Also write an algorithm / program to sort an element using Quick Sort.
- 5 Answer following in detail : (any two) 14
- (a) Explain Tower of Hanoi with an example.
 - (b) Explain 2-way merge sort with an example.
 - (c) Explain Simulation.