



RAN-1911000103040001

RAN-1911000103040001**S.Y.BCA (Sem.-III) Examination****October / November - 2019****Data Structure****સૂચના : / Instructions**

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.

Fill up strictly the details of signs on your answer book

Name of the Examination:

S.Y.BCA (Sem.-III)

Name of the Subject :

Data Structure

Subject Code No.: 1911000103040001

Seat No.:

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Student's Signature

Q:1 Answer in short (Any Seven)**14**

- 1) Differentiate linear and nonlinear data structure.
- 2) What is critical node?
- 3) Write an over flow and underflow condition of input restricted Dqueue.
- 4) What will be the location of front and rear pointers after three consecutive insert and 1 delete operation in simple queue of size 5 with starting location of front and rear at -1 position?
- 5) Write node representation of following polynomial equation.

$$4X^3 - 7X^2 + 8X + 9$$
- 6) Define simulation.
- 7) List out applications of stack.
- 8) Write a difference between Simple Queue and Circular Queue.

Q:2(A) What is stack? Write algorithms of various stack operations. 7

OR

(A) Explain AVL tree in detail. 7

(B) Explain storage representation of binary tree. 7

Q:3(A) Discuss advantages of dynamic memory allocation scheme.
Which scheme is followed by link list and stack?
Write an algorithm to sort a singly link list. 7

OR

A) Define Circular Queue. Discuss advantages of Circular Queue over simple queue. Write algorithms to insert and delete element in circular queue. 7

(B) Explain 2-Way merge sort in detail with example.

Q:4 Write a short note on following (Any 2) 14

- 1) Selection sort.
- 2) Output restricted D-queue.
- 3) Storage representation of array.

Q:5 (A) Write an algorithm to evaluate prefix expression. Convert the expression $P*(Q+R/S)^T$ into prefix and evaluate this prefix expression using stack tracing with suitable value of P, Q, R, S, T 7

OR

(A) Write an algorithm to insert node at beginning and end of singly link list. 7

(B) Explain Tower of Hanoi as application of stack.