



EN-3733

B. C. A. (Sem. III) (CBCS) Examination

October / November - 2016

Data Structures

Time : Hours]

[Total Marks : 70

Instructions : (1)

नीचे दशांशिक निशानीवाणी विगतो उत्तरवही पर अवश्य कपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
B. C. A. (SEM. 3) (CBCS)	<input type="text"/>
Name of the Subject :	<input type="text"/>
DATA STRUCTURES	<input type="text"/>
Subject Code No. : <input type="text" value="3"/> <input type="text" value="7"/> <input type="text" value="3"/> <input type="text" value="3"/>	Section No. (1, 2.....) : <input type="text" value="Nil"/>
	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 questions.

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

- (1) Define data structure. List out types of data structure.
- (2) What is TOP pointer in stack ?
- (3) Explain Priority Queue.
- (4) Explain difference between Simple queue and Circular queue.
- (5) What is node ? Explain with example.
- (6) What will be the position of front and rear if circular queue is full ?
- (7) Differentiate between Singly link list and Doubly link list.
- (8) What is root node and leaf node with example.

2 Answer the following in detail : (any two) 14

- (a) What is recursion ? Solve Tower of Hanoi with an example.
- (b) What is stack ? Write an algorithm to perform PUSH and POP operation.

- (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 create a node in doubly link list.
- (c) Explain different types of link list with an example. Also write an algorithm/program to delete particular element from singly link list.

4 Answer following in detail : (any two)

14

- (a) What is binary tree ? Write an algorithm to traverse binary tree in In-order, Pre-order and post-order.
- (b) Explain how binary search is better than linear search. Write an algorithm for binary search.
- (c) What is sorting ? Explain which sorting technique is faster. Also write an algorithm/program to sort an element using insertion sort.

5 Answer following in detail : (any two)

14

- (a) Explain 2-way merge sort with an example.
- (b) Explain the sequential and linked storage representation of binary tree.
- (c) Define 2-3 trees.