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(20116) Roll No.

B.C.A. - III Sem.

18012

B.C.A. Examination, Dec. 2015

Data Structure using C and C++

(BCA-302)

(New)

Time : Three Hours] [Maximum Marks : 75

Note : Attempt **all** the sections as per instructions.

Section - A

(Very Short Answer Questions)

Note : Attempt all **five** questions. Each question carries 3 marks. Answers should not exceed 75 words.

1. Write a short note on sparse Array.
2. Enlist various primitive operations of stack.

P.T.O.

3. How and why headers are important in Linked List?
4. What do you understand by Indexing in Binary Search Trees?
5. Describe how hashing enhances the system performance.

Section - B

(Short Answer Questions)

Note : 1. Attempt any **two** questions from 3 Questions.

2. Each Question carries 7.5 marks each.
3. Answers should not exceed 200 words.
6. Briefly describe the concept of Tridiagonal matrices with examples.
7. Differentiate between D-queues and priority queues.
8. Write an algorithm to perform Merge Sort.

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Section - C

Note : 1. Attempt any **three** questions from **five** questions.

2. Each question carries 15 marks.

3. Answers should be in detail. $3 \times 15 = 45$

9. 'P' is a two dimensional Array with 5 rows and 5 columns i.e. P[1:5, 1:5]. Each element of array is stored in three memory locations. If P[1, 1] begins at address 800.

Find the location of P[4, 3] when :

(i) Organization is row major.

(ii) Organization is column major.

10. Define Stack. Write algorithms for PUSH and POP operations. Also implement stack by using arrays.

11. Define overflow and underflow conditions of Linked list. Write an algorithm to insert a node into linked list at a specific location.

12. Define the following:

$3 \times 5 = 15$

(i) Inverted Trees

(ii) Post order traversal

(iii) Binary Search Tree (BST)

13. Create a heap for the list of elements given below :

Index	Values
1	97
2	22
3	43
4	100
5	34
6	97
7	81
8	10
9	44
10	41