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(Printed Pages 4)

17/23-C

B.C.A. (Second Semester)

Examination, 2017

Paper : Third

(BCA-203-Data & File Structure Using 'C')

Time : Three Hours] [Maximum Marks : 75

Note : Attempt questions from **all** sections as per instructions.

Section - A

(Very Short Answer Type Questions)

Note : Attempt **all** parts of this question. Give answer of each part in about 50 words. $1\frac{1}{2} \times 10 = 15$

1. (a) What is meant by updating data structure operation?
- (b) Define algorithm complexity.
- (c) Define ordered array.
- (d) Write the applications of linked list.
- (e) When a Deque should be used?
- (f) Define sibling.

P.T.O.

(2)

- (g) Write the applications of graph.
- (h) What is the time complexity of selection sort?
- (i) What is meant by Retrieval from a file?
- (j) Define Master file.

Section - B

(Short Answer Type Questions)

Note : Attempt **all** questions. Give answer of each question in about 200 words. $8 \times 5 = 40$

2. Why do we use dynamic memory allocation?

OR

What is row major order? Explain with an example.

- B*
- Differentiate between dequeue and priority queue.

OR

Convert the following infix expression into postfix expression.

$((A - (B + C)) * D) \uparrow (E + F)$

17/23-C

4. Write a program to delete a node in a doubly linked list.

OR

Suppose the following values are inserted into a binary tree in the order given 12, 7, 9, 10, 22, 24, 30, 18, 3, 14, 20 Draw a diagram of the resulting binary tree and find the inorder traversal of tree.

5. What are Graphs? Give various representation of graphs.

OR

Write an algorithm which counts the number of connected components in a graph.

6. Compare and contrast between sequential search and binary search.

OR

What do you mean by Garbage collection and compaction.

Section - C

(Long Answer Type Questions)

Note : Attempt any **two** questions. Give answer

of each question in about 500 words.

10×2=20

7. Write a program to input a matrix $N \times N$ and to determine :

- (i) The no. of elements in matrix.
- (ii) Summation of diagonal elements
- (iii) Product of diagonal elements.

8. List some linear and non linear data structures stating the application area where they will be used.

9. Run selection sort algorithm for the following data : 5, 4, 3, 6, 11, 10, 8, 9, 7, 1, 26, 2 What is the complexity of this method? Discuss.

10. What is spanning tree? Present algorithms to obtain the spanning trees for a graph.

11. Write short notes on any **two** of the following :

- (a) Lower Bounds
- (b) Merge Sort
- (c) Rotation of tree