

Bachelor of Science (B.Sc.) (Part-II) Fourth Semester
B.Sc. 24141 - Computer Science Paper – I (Data Structures)

P. Pages : 2

Time : Three Hours



GUG/W/18/1286

Max. Marks : 50

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- Notes :
1. All questions are compulsory & carry equal marks.
 2. Draw neat and labelled diagrams wherever necessary.
 3. Assume suitable data wherever necessary.
 4. Avoid to write vague answers.

1. Either :

- a) Describe operations on Data Structures. **5**
- b) Write an algorithm to calculate sum of all even values in array of size 'n'. **5**

OR

- c) Explain binary search method. Give limitations of the Binary search algorithm. **5**
- d) Write an algorithm to sort the elements using Bubble Sort Method. **5**

2. Either :

- a) What is Priority Queue? Explain with suitable example. **5**
- b) Write an algorithm to PUSH an element into stack. **5**

OR

- c) What is circular queue? Explain with suitable example. **5**
- d) Write an algorithm to insert an element into queue. **5**

3. Either :

- a) Differentiate between Recursive and Iterative function with suitable example. **5**
- b) Write an algorithm for Fibonacci series using Recursion. **5**

OR

- c) Write a note on Garbage Collection. **5**
- d) Explain overflow and underflow condition with respect to linked list. **5**

4. Either :
- a) A binary tree T has 9 nodes. The inorder and preorder traversals of T yield the following sequences of nodes : 5
Inorder : E A C K F H D B G
Preorder : F A E K C D H G B
Draw the binary tree T. Also explain the logic.

- b) Write an algorithm to traverse a Tree by using Inorder Traversal method. 5

OR

- c) Write an algorithm to demonstrate PRIM's Algorithm. 5

- d) Discuss various terminology used in Graph. 5

5. All questions are compulsory.

- a) What is array? Give example. 2½
- b) Convert infix expression into postfix expression $b^2 - 4 * a * c$. 2½
- c) Write recursive algorithm to find factorial of a given number. 2½
- d) Write a note on indegree and outdegree of Graph. 2½
