

**Bharati Vidyapeeth's College Of Engineering for Women Pune-43**  
**Department – E & TC**

**SE- Unit Test I**  
**Subject-DS**

**Date: 25/02/2010**

**Max Marks:30**

Q-1 a) What is sorting? State different types of sorting and write a function in C to implement any 1 sorting. 8

b) What do you mean by time complexity of an algorithm. 4

c) Define term ADT and its properties. 3

OR

Q-1 a) What is searching? State different types of searching. And write C function to Implement any 1. 8

b) What is recursion? Explain with example. 3

c) What is function? Give its advantages. 4

Q-2 a) With the help of suitable example explain the following parameters passing Mechanism 6

i) Call by value

ii) Call by reference

b) Differentiate between array and pointer. 3

c) Write a function to perform following string operations using pointers 6

i) Concatenation

ii) Copy

OR

Q-2 a) Compare structure and union. 3

b) What are different ways to represent polynomial of single variable?

Write a C function to evaluate polynomial. 6

c) What are the advantages of pointer and differentiate between an array of pointers and Pointer to an array

**Bharati Vidyapeeth's College Of Engineering for Women Pune-43**  
**Department – E & TC**

**SE- Unit Test II**  
**Subject-Data Structure**

**Date: 26/03/2010**

**Max Marks:30**

- Q-1) a) Write a C function to add and delete the node in SLL at the beginning 6
- b) Write a function to concatenate Link list 5
- c) What is difference between malloc and calloc 4
- OR
- Q-1) a) Compare singly linked list with doubly linked list. 4
- b) What is dynamic memory allocation. How does it help in building complex program. 6
- c) Write a function to add two polynomials. 5
- i.  $3x^2y + 9xy^3 + 15xy + 3$
- ii.  $13x^3y^2 + 7x^2y + 22xy + 9y^3$
- Q-2) a) What is stack. Implement stack using array to perform following operations:
1. Push
  2. Pop
  3. Stack empty
  4. Stack full 8
- b) Explain the concept of queue with suitable example and write any 1 application of queue. 7
- OR
- Q-2) a) Write pseudo C code to remove an element from circular queue. 4
- b) Explain the concept of priority queue and give its application for the same. 5
- c) Write C code for stack as an ADT. 6

**Bharati Vidyapeeth's College of Engineering for Women Pune-43**  
**Department – E & TC**

**SE- Unit Test I**  
**Subject-DS**

**Date:11/02/11**

**Max Marks:30**

Q-1) a) Define sorting

b) WAP to implement a sorting method

1. Bubble sort

2. Selection sort

12

c) Define searching and WAP to implement sequential searching

6

OR

Q-1) a) What is searching? Write different types of searching.

10

b) Determine time complexity of sequential and binary search.

8

Q-2) a) What is sorting? What are different types of sorting? Differentiate them.

12

OR

Q-2) a) Sort the following numbers using insertion sort and bubble sort. Write the passes and comparisons.

23    7    45    4    15

6

b) Define searching. WAP for linear searching.

6

**Bharati Vidyapeeth's College Of Engineering for Women Pune-43**  
**Department – E & TC**

**SE- Unit Test II**  
**Subject-DS**

**Date:29/03/2011**

**Max Marks:30**

Q-1) a) Let p be a pointer to heads node of one SLL in q be pointer to the head node of second SLL. Write a function in C to merge the two SLLs in the following manner

$p_1 \rightarrow q_1 \rightarrow p_2 \rightarrow q_2 \rightarrow p_3 \rightarrow q_3 \rightarrow \dots \rightarrow p_n \rightarrow q_n$

Where  $p_1 \rightarrow \dots \rightarrow p_n$  are nodes of 1<sup>st</sup> SLL

$q_1 \rightarrow \dots \rightarrow q_n$  are nodes of 2<sup>nd</sup> SLL

8

b) 1. Give C declaration for node structure for declaring a SLL and DLL

2

2. Write short note on ADT for linked list

5

OR

Q-1) a) What is GLL? Represent the polynomial using GLL

$X^{10}y^3z^2 + 2x^8y^3z^2 + 3x^8y^2z^2 + x^4y^4z + z + 6x^3y^4z + 2yz$

6

b) i. Give two applications of stack and queue each which showing the benefit of stack and queue.

ii. Write C code for stack as ADT.

5

Q-2) a) Convert the following infix expression to prefix, postfix expressions.

6

1.  $A \ \$ B * C - C + D / A / (E + E)$

2.  $((A/B^C)) + (D * E) - (A * C)$

B) Give the concept of priority queue and give application for same.

4

C) Define the following term with respect to tree

1. Complex binary tree

2. Forest

3. Height of tree

4. Skewed binary tree

5. Full binary tree

5

**Bharati Vidyapeeth's College of Engineering for Women, Pune**

**Electronics and Telecommunication Department**

**Unit Test:1 (Marks:30)**

**Subject: Data Structure**

Q.1a) Write a 'C' function to read 'n' numbers in an array and find the numbers of even and odd numbers from it?.....6 M

Q.1b) Explain row major order and column order representation of 2 dimensional arrays.....4 M

Or

Q.1a) Write a 'C' program to find the sum of major and minor diagonals of m\*m matrix.....6 M

Q.1b) Explain Array and give different types of arrays with examples?.....4 M

Q.2a) Write recursive and non recursive functions of binary search?.....6 M

Q.2b) Write a 'C' function to implement select sort. Discuss the space and time complexity issues.?.....10 M

Or

Q.2b) Write a program to perform multiplication of two polynomials using array, also compute the time complexity of your program?.....10 M

Q.3) Write a 'C' function to interchange two numbers by using pointers?.....4 M

**Bharati Vidyapeeth's College of Engineering for Women, Pune**

**Electronics and Telecommunication Department**

**Unit Test:2 (Marks:30)**

**Subject: Data Structure**

Q.1a) Compare singly link list with doubly link list.....6 M

Q.1b) Compare linked organisation with sequential organisation?.....4 M

Or

Q.1a) Write a 'C' function to delete a node from any position of DLL?.....6 M

Q.1b) Write a 'C' function to invert singly link list?.....4 M

Q.2a) Define ADT write down ADT of stack?.....6 M

Q.2b) Write a 'C' function to evaluate postfix expression and explain with suitable example ?.....10 M

Or

Q.2b) What is priority queue ?Give the applications? Write a 'C' function to perform insertion and deletion on priority queue?.....10 M

Q.3) State and explain the advantages of threaded binary tree?.....4 M