National University

B.Sc(Hons) in Computer Science and Engineering
Part-II, 3rd Semester Final Examination-2019
Session : 2017-2018
Course Code: 520202 (Data Structure Lab)

Time-3 hours   Full Marks-40

(Students will be given the questions in random orders, i.e. lottery)

Section -A   (Answer any two)

1. Write a C/C++ program to insert an element into a linear array.
2. Write a C/C++ program to delete an element from a linear array.
3. Write a C/C++ program to find the largest and smallest element from an array.
4. Write a C/C++ program to find the Fibonacci series using recursive function.
5. Write a C/C++ program for Tower of Hanoi problem.
6. Write a C/C++ program to implement first pattern matching algorithm.
7. Write a C/C++ program to search an element from an array using linear search algorithm.
8. Write a C/C++ program to search an element from an array using binary search algorithm.
9. Write a C/C++ program to sort an array of integers using bubble sort algorithm.
10. Write a C/C++ program to sort an array of integers using quick sort algorithm.

Section -B   (Answer any one)

1. Write a C/C++ program to insert an element into the linked list.
2. Write a C/C++ program to delete an element from the linked list.
3. Write a C/C++ program to implement all major stack operations.
4. Write a C/C++ program to implement all major queue operations.
5. Write a C/C++ program to evaluate postfix notation expression.
6. Write a C/C++ program to create and display elements of a binary tree.
7. Write a C/C++ program to traverse a binary tree in preorder/inorder/postorder.
8. Write a C/C++ program to implement the shortest path algorithm.

Mark Distribution

Algorithm	:	10
Coding	:	10
R.....	:	1..

Time: 3 Hours

Full Marks: 40

Answer any two of the following questions

1) Write a C++/Java program with class to find whether a given number is prime or not.
2) Write a C++/Java program to enter any number and find its factorial using constructor.
3) Write a C++/Java program to swap two numbers declared in two different classes using friend function.
4) Write a C++/Java program for calculating the area of triangle, circle and rectangle using the concept of function overloading.
5) Write a C++/Java program to perform addition of two complex numbers using constructor overloading.
6) Create a class student which has data members as name, semester, roll no, section, marks in five subjects. Write a C++/Java program to display all information of the students with total marks.
7) Implement a class string containing the following functions:
    (i)   Overload the '+' operator to carry out the concatenation of strings.
    (ii)   Overload '=' operator to copy string.
    Write a complete C++/Java program to display strings.
8) Write a C++/Java program to find the square and cube of a number read from keyboard. (Demonstrate the concept of inheritance)
9) Write a C++/Java program to read a set of lines from the keyboard and to store it in a specific file.
10) Write a C++/Java program to append the contents of a file into another.

Marks Distribution:

Code   : (10 X 2) = 20
Result   : (05 X 2) = 10
Viva-voce : (05 X 2) = 10

40