

**Data Processing and Computer Applications  
(MT 504)**

**Full Marks: 70**

**Time: 3 hrs**

*Use SINGLE answer script for answering of all questions.  
Answer any SEVEN questions.*

1. Write a function "erase", which will be called from the main to delete blank spaces from the sentence by using pointers. [10]
2. Write a program to create a file which will store the names of students of a class and their roll numbers and marks obtained in a particular subject. Create another file which will store and display the name of the students in descending order of the marks obtained in the subject. [10]
3. Write a program which will use pointers to sort an one dimensional integer array in ascending order of magnitude. [10]
4. Write a program to create a data file 'number' which will store N number of integer number. Write another program for opening the file 'number' to find the numbers those are divisible by 3 and store them in another file "output". [10]
5. Write a program that will read a list of names, both first name and last name. Display the names in alphabetical order based on either first name or surname depending on the option entered from the keyboard. [10]
6. Write a function that receives  $n$  integers and returns the sum, average and standard deviation of these numbers. Call this function from *main()* and print the results in *main()*. [10]

7. A positive integer is entered through the keyboard, write a program using *recursive function* to find the binary equivalent of this number.

[10]

8. There is a structure called *employee* that holds information like employee code, name, and date of joining. Write a program to create an array of structures and enter some data into it. Then ask the user to enter current date. Display the names of those employees whose tenure is  $\geq 3$  years according to the given current date.

[10]

9. The following set of numbers is popularly known as *Pascal's triangle*.

```
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
```

Write a program to calculate and display the elements of the *Pascal triangle* for a given number of rows entered from the keyboard.

[10]

10. Justify the following:

- (a) BIOS acts as an interface between the hardware and the operating system.
- (b) I-time and E-time in combination known as Machine cycle time.
- (c) Registers are part of memory.
- (d) A microprocessor is nothing but a chip of central processing unit.
- (e) Virtual memory is inherently slow.

[2x5]

11. Write short notes on:

- (a) Cache
- (b) Magnetic disc devices
- (c) Assemblers and compilers
- (d) Operating System
- (e) Octal number system

[2x5]