

**Bharti Vidyapeeth's  
Institute of Computer Applications and Management  
A-4, Paschim Vihar, New Delhi-63**

**Model Question Paper III, MCA-I Sem**

<b>Paper Code: MCA - 103</b>	<b>Subject: Programming in C</b>
<b>Time: 3 Hours</b>	<b>Maximum Marks: 75</b>
<b>Note: Attempt FIVE questions in all. Question No. 1 is compulsory and attempt one question from each unit.</b>	

1. Answer any ten of the following questions briefly:- 2.5 x 10 = 25
- (a) Elaborate through example code the lifetime of a register variable? 2.5
  - (b) Simulate chmod() through an appropriate example. 2.5
  - (c) Enlist the different types of constant pointers with suitable examples. 2.5
  - (d) Differentiate between fork() and execvp() with an example 2.5
  - (e) List the functions for formatted I/O with an example each. 2.5
  - (f) Describe the advantages of using linux with C. 2.5
  - (g) Differentiate between a structure and union in C. 2.5
  - (h) Explain the use of break keyword in C? 2.5
  - (i) With syntax explain how to declare an array of pointers in C. 2.5
  - (j) Explain the usage of the keyword static with example. 2.5
  - (k) Explain the usage of the int access (char \*path, int mode) with an example 2.5
  - (l) Discuss the use of #if-#endif with an example. 2.5

**UNIT - I**

2. (a) Explain the major components of a C program? Discuss the significance attached to the name main? 6
- (b) An employee's basic salary is input through the keyboard. Their dearness allowance is 40% of basic salary, and house rent allowance is 20% of basic salary. Design a function to calculate employee gross salary. Develop a complete program calling this function. 6.5
3. (a) Develop a C program to print all prime numbers between 1 to 500 6
- (b) Design a C-program to find a factorial of any number using recursion technique. The program should continue till the user enters a 0. 6.5

**UNIT - II**

4. (a) Describe a macro; with an example explain how it is better from a function. 6
- (b) Explain pointer to pointer with an example. 6.5
5. (a) Define a structure consisting of two floating-point members, called real and imaginary. Include the tag complex within the definition. Declare the variables xl, x2 and x3 to be structures of type complex. Declare a pointer variable, px, which points to a structure of type complex. Write expressions for the structure members in terms of the pointer variable. Declare a one-dimensional, 100-element array called cx whose elements are structures of type complex. Write expressions for the members of the 18th array element (i.e., element number 17). 6

- (b) Explain array of pointer with an example. 6.5

### UNIT - III

6. (a) There are 100 records present in a file with the following structure: 6

```
struct date { int d, m, y ; } ;  
struct employee { int empcode[6] ;  
char empname[20] ;  
struct date join_date ;  
float salary ; } ;
```

Design a program to read these records, arrange them in ascending order of join\_date and write them in to a target file.

- (b) Classify the memory-intensive string manipulation functions defined in <string.h>. Give appropriate code examples. 6.5
7. (a) Demonstrate the use of qsort() function to sort an array in C 6
- (b) Given a list of names of students in a class, write a program to store the names in a file on disk. Make a provision to display the nth name in the list (n is data to be read) and to display all names starting with S. 6.5

### UNIT - IV

8. Elaborate a thread? Describe how multiple threads can be created and initiated in a C program with an example. 12.5
9. Define process. With an example explain process creation using fork() and exec() functions. Enlist the purpose of the functions getpid(), getppid(), getppid() with appropriate code fragments? 12.5