**Faculty of Science**
**School Of Basic Sciences**
BCA –I Semester
Make UP Examination: 2018-19
CA1103 – C Programming
(OPEN BOOK)

**Duration: 3 Hours**                                                    **Max. Marks: --100**
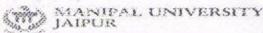
**Instructions:**

- Answer any five full questions
- Missing data, if any, may be assumed suitably.
- Only two books and one hand written notes are allowed.

| 1. | a) | Write a C program which reads a 2-D matrix and displays major and minor diagonal elements. | [10] |
|---|---|---|---|
| | b) | Write a C program using pointer to read and display an array. | [6] |
| | c) | Explain how one and 2D arrays are stored in memory. | [4] |
| 2. | a) | Show steps involved in binary search to find location of element '12' in the following array. | [10] |

| 10 | 12 | 16 | 18 | 19 | 22 | 25 | 27 | 30 | 32 |
|---|---|---|---|---|---|---|---|---|---|

| | b) | Draw flow chart to illustrate working of linear search. | [6] |
|---|---|---|---|
| | c) | Differentiate between binary search and linear search | [4] |
| 3. | a) | Write a C program to display Fibonacci series up to 10 elements using recursion. | [10] |
| | b) | Write a function which checks if a given number is prime or not. | [6] |
| | c) | What conditions should be kept in mind while using a recursive function? | [4] |
| 4. | a) | Define a structure "Doctor" in C, whose member elements are- name, id, specialization, experience (in years). Read and display 5 records of type "Doctor". | [10] |
| | b) | Write a C program which reads a letter in upper case and displays it in lower case. | [6] |
| | c) | Differentiate between structure and union in terms memory used by them to store members. | [4] |
| 5. | a) | Show passes of Bubble and Insertion sort for following data.(In ascending order) | [10] |

| 72 | 74 | 77 | 76 | 71 | 78 | 80 | 79 | 75 | 73 |
|---|---|---|---|---|---|---|---|---|---|

| | b) | Write a function which counts the occurrence of letter 'a' or 'A' in a string. | [6] |
|---|---|---|---|
| | c) | Draw a flowchart to check if number is odd or even. | [4] |
| 6. | a) | Write a C program to print following pattern.<br><br>1<br><br>1 2 | [10] |

| | | | |
|---|---|---|---|
| | | 1 2 3 <br> 1 2 3 4 | |
| | b) | Draw a flow chart for a ticketing system in which following constraints are followed - <br><br> Age  < 5  - No fare <br> Age between 5 and 60 -   gender – female  - 50 % rebate on fare <br> Age between 5 and 60 -   gender – male    - Full fare <br> Age > 60 - No fare. | [6] |
| | c) | Discuss importance of loops in programming. | [4] |