

M.C.A.
(SEM I) THEORY EXAMINATION 2022-23
PROBLEM SOLVING USING C

Time: 3 Hours**Total Marks: 100****Note:** Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.**2 x 10 = 20**

- (a) Explain the features of C.
- (b) Explain the types of constant used in C.
- (c) Explain the advantages of recursion.
- (d) Explain formatted I/O functions.
- (e) Explain how the pointer variable declared and initialized.
- (f) When null pointer is used?
- (g) Specify the use of Enumerated data type.
- (h) Compare a structure with an array.
- (i) Why files are needed?
- (j) Explain the fseek() function.

SECTION B

2. Attempt any three of the following:**10 x 3 = 30**

- (a) How a high level programming language is useful for a systematic development of programs? Explain.
- (b) Explain the difference between for, while and do-while loops.
- (c) Write a program to concatenate two strings without using standard library function.
- (d) Explain the local and external variables. Explain different storage classes used in C.
- (e) Explain the following graphics functions supported by C language:
 - (i) initgraph()
 - (ii) rectangle()
 - (iii) line()

SECTION C

3. Attempt any one part of the following:**10 x 1 = 10**

- (a) Define an Algorithm. Write the characteristics of a good algorithm.
- (b) Explain the following with proper example:
 - (i) break
 - (ii) continue
 - (iii) goto

4. Attempt any *one* part of the following: **10 x 1 = 10**

- (a) Write a program to accept elements of an array from user and sort and display them in ascending order.
- (b) Define union. Explain the differences between union and structure.

5. Attempt any *one* part of the following: **10 x 1 = 10**

- (a) Explain the following functions of dynamic memory allocation:
 - (i) malloc()
 - (ii) calloc()
 - (iii) realloc()
 - (iv) free()
- (b) Discuss about the following operators in C language with example.
 - (i) Bitwise operators
 - (ii) Increment and decrement operators
 - (iii) Logical operators

6. Attempt any *one* part of the following: **10 x 1 = 10**

- (a) What is type conversion? Explain two types of conversion with suitable examples.
- (b) How to declare and initialize a Two-dimensional array? Discuss with examples.

7. Attempt any *one* part of the following: **10 x 1 = 10**

- (a) Explain the following:
 - (i) Nested structures
 - (ii) Array of structures
- (b) Explain different categories of pre-processor directives used in C.