PAPER ID-311920

Roll No: | | | | | | | | | | | | |

MCA
(SEM I) THEORY EXAMINATION 2024-25
PROBLEM SOLVING USING C

TIME: 3 HRS   **M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1.   Attempt *all* questions in brief.   **2 x 07 = 14**

Q no.	Question	CO	Level
a.	Explain importance of structured programming in writing readable, maintainable, and error-free code.	1	K1, K2
b.	What are the common types of operators and their use cases?	1	K1, K2
c.	Infer how default statements influence the flow of execution in a program.	2	K2, K3
d.	Show how for, while, and do-while loops differ in terms of initialization, condition checking, and iteration.	2	K2, K3
e.	Explain how arrays are declared, initialized, and accessed.	3	K2, K3
f.	Explain how enumerations enhance code readability, and what are their typical use cases?	4	K2, K3
g.	Interpret how memory allocated and deallocated to create an array of integers?	5	K2, K3

SECTION B

2.   Attempt any *three* of the following: **7 x 3 = 21**

a.	How does an algorithm help in solving a problem? Explain the role of flowcharts in visualizing the steps of an algorithm and improving the development process.	1	K1, K2
b.	Demonstrate the use of switch statements in C programming. What are the restrictions on switch values, and how does it compare to if-else statements for handling multiple conditions?	2	K2, K3
c.	Explain the concept of a pointer to a pointer in C. How does this concept help in managing multi-level data structures?	3	K2, K3
d.	Solve the problem of managing variable scope and lifetime using static and extern storage classes. Demonstrate their use in a program.	4	K2, K3
e.	Solve the problem of handling record I/O in files. Demonstrate how to read and write structured data to files using C.	5	K2, K3

SECTION C

3.   Attempt any *one* part of the following: **07 x 1 = 07**

a.	How does compiling and linking a C program work? Explain the steps involved in converting a source code file into an executable program.	1	K1, K2
b.	Define and explain the different types of tokens in C programming, such as keywords, identifiers, constants, and variables. How are these tokens used to write meaningful programs?	1	K1, K2

4.   Attempt any *one* part of the following: **07 x 1 = 07**

a.	Develop a program that uses if-else and switch statements to classify a number as positive, negative, or zero. Explain the logic behind the program.	2	K2, K3

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b.	Demonstrate the use of nested loops to print a pattern of numbers or stars. Explain the logic behind the program and how nested loops help generate complex patterns.	2	K2, K3

5.   **Attempt any *one* part of the following:**   **07 x 1 = 07**

a.	Develop a program that uses pointers to pass arguments to functions. How does passing by reference improve performance and enable modification of variables within functions?	3	K2, K3
b.	Identify the advantages of using an array of pointers in C. How is this concept applied in dynamic memory allocation and string manipulation?	3	K2, K3

6.   **Attempt any *one* part of the following:**   **07 x 1 = 07**

a.	Explain the role of the register storage class in optimizing variable access. How does it improve performance for frequently accessed variables?	4	K2, K3
b.	Illustrate the use of an array of structures. How can this concept be applied to manage collections of related data, such as a list of employees with different attributes?	4	K2, K3

7.   **Attempt any *one* part of the following:**   **07 x 1 = 07**

a.	Explain the role of graphics in C programming? Explain how graphics libraries are used to draw shapes, lines, and images in a graphical user interface (GUI).	5	K2, K3
b.	Demonstrate the use of graphics functions to draw basic shapes like circles, rectangles, and lines. How do these shapes get rendered on the screen?	5	K2, K3