

Enrollment No.....



Faculty of Science / Engineering

End Sem Examination Dec-2023

CA3CO01 Problem Solving &amp; Programming

Programme: BCA / BCA-

Branch/Specialisation: Computer

MCA (Integrated)

Application

**Duration: 3 Hrs.****Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. C programming language is a- 1  
 (a) Scripting programming language  
 (b) Object oriented programming language  
 (c) Natural programming language  
 (d) Structured programming language
- ii. Which of the following is the first step in problem solving? 1  
 (a) Analysing the problem (b) Developing the solution  
 (c) Coding and implementation (d) Testing the problem
- iii. What is the result after execution of the following code if a is 10, b is 5, and c is 10? 1  
 If ((a > b) && (a <= c))  
     a = a + 1;  
 else  
     c = c+1;  
 (a) a = 10, c = 10 (b) a = 11, c = 10  
 (c) a = 10, c = 11 (d) a = 11, c = 11
- iv. A name having few letters, numbers, and special character\_(underscore) is called as- 1  
 (a) Keywords (b) Identifiers (c) Data types (d) Tokens
- v. How do you initialize an array in C? 1  
 (a) int arr[3] = (1,2,3); (b) int arr(3) = {1,2,3};  
 (c) int arr[3] = {1,2,3}; (d) int arr(3) = (1,2,3);
- vi. The keyword used to transfer control from a function back to the calling function is- 1  
 (a) Switch (b) Go to (c) Go back (d) Return

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- vii. Which keyword is used to define a union? **1**  
 (a) un (b) union (c) Union (d) None of these
- viii. Which of the following is the collection of different data types? **1**  
 (a) structure (b) string (c) array (d) All of these
- ix. What is the function of the mode 'w+'? **1**  
 (a) create text file for writing, discard previous contents if any  
 (b) create text file for update, discard previous contents if any  
 (c) create text file for writing, do not discard previous contents if any  
 (d) create text file for update, do not discard previous contents if any
- x. Comment on the following pointer declaration: int \*ptr, p; **1**  
 (a) ptr is a pointer to integer, p is not  
 (b) ptr and p, both are pointers to integer  
 (c) ptr is a pointer to integer, p may or may not be  
 (d) ptr and p both are not pointers to integer

- Q.2 i. Define an algorithm. List any two characteristics of an algorithm. **2**  
 ii. Write an algorithm to check whether given integer value is Even or Odd. Also draw the flow chart of the same. **3**  
 iii. What is programming language? Explain the types of programming languages. **5**
- OR iv. What is problem solving in C? Explain the steps of problem solving. **5**

- Q.3 i. Write short note on variables and constants. **2**  
 ii. Explain switch case statement with suitable example. What will happen if break is not used in switch case block? **8**
- OR iii. What is operator in C language? Explain different types of operators with an example. **8**

- Q.4 i. What is the memory representation of 1d & 2d array? **3**  
 ii. What is string? Explain the basic C functions used in string handling. Write a C program to calculate length of the inputted string without using strlen() Function. **7**
- OR iii. What are the differences between call by value and call by reference? Write a function to swap the values of two variables. **7**

- Q.5 i. What is structure in C language? Explain it with example. **4**  
 ii. Define union in C language with its uses. How to declare union, initialize the members of the union and access the members of the union? Explain with example. **6**

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- OR iii. Declare a structure called "stud" having the elements roll, maths, phy, chem, eng, hindi (all integer), per (float) and grade (char). Accept the values of roll, maths, phy, chem, eng and hindi. For 5 students from the user, calculate the percentage and grade and print the data on the screen. **6**

- Q.6 Attempt any two:
- i. What is file handling? Explain the methods of Read-Write operation with the file using C language. **5**
- ii. What are Pointer variables, how it is different from the normal variables? Explain Pointer variable declaration. Also Write a C program to Swap values of two variable using pointers. **5**
- iii. What do you mean by command line argument? Explain by program. **5**

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## Marking Scheme

### CA3CO01 (T)-Problem Solving & Programming

Q.1	i)	C programming language is a: <b>d. Structured programming language</b>	1
	ii)	Which of the following is the first step in problem solving? <b>a. Analysing the problem</b>	1
	iii)	What is the result after execution of the following code if <b>a is 10, b is 5, and c is 10?</b> <b>b. a = 11, c = 10</b>	1
	iv)	A name having few letters, numbers, and special character _(underscore) is called as: <b>b. Identifiers</b>	1
	v)	How do you initialize an array in C? <b>c) int arr[3] = {1,2,3};</b>	1
	vi)	The keyword used to transfer control from a function back to the calling function is: <b>d. Return</b>	1
	vii)	Which keyword is used to define a union? <b>b. union</b>	1
	viii)	Which of the following is the collection of different data types? <b>a. structure</b>	1
	ix)	What is the function of the mode 'w+'? <b>b. create text file for update, discard previous contents if any</b>	1
	x)	Comment on the following pointer declaration: int *ptr, p; <b>a. ptr is a pointer to integer, p is not</b>	1
Q.2	i.	Define Algorithm	1 Marks
		Characteristics of an algorithm	1 Marks
	ii.	Algorithm to check value is Even or Odd. flow chart	2 Marks 1 Marks
	iii.	What is Programming Language? Explain the types of Programming Languages.	2 Marks 3 Marks
OR	iv.	What is Problem Solving? Explain the steps of Problem Solving.	1 Marks 4 Marks
Q.3	i.	Write Short Note on: Variables and Constants.	2 (1 Mark For Each)
	ii.	Explain Switch Case Statement with suitable example. (3 Marks for Switch Case Explanation+ 2 Mark for Example.) What will happen if break is not used in switch case block?	8

OR	iii.	What is Operator in C language? Different types of Operators with an example	3 Marks 2 Marks 6 Marks	8
Q.4	i.	Memory representation of 1d & 2d array	(1.5 for each) 3 Marks	3
	ii.	What is String? Basic C functions used in String handling. program to calculate length of the string	2 Marks 2 Marks 3 Marks	7
OR	iii.	Differences between call by value and call by reference Write a function to swap the values of two variables.	4 Marks 3 Marks	7
Q.5	i.	What is Structure in C language? Explain it with example.	2 Marks 2 Marks	4
	ii.	Define Union in C its uses How to declare Union initialize the members of the Union and access the members of the Union , explain with example.	2 Marks 1 Marks 1 Marks 1 Marks 1 Marks	6
OR	iii.	Declare structure Array of Structure Display result	2 Marks 2 Marks 2 Marks	6
Q.6	i.	What is file handling? Explain the methods of Read-Write operation.	2 Marks 3 Marks	5
	ii.	What are Pointer variables , how it is different from the normal variables ? Explain Pointer variable declaration. Write a C program to Swap values of two variable using pointers.	1 Marks 1 Marks 1 Marks 2 Marks	5
	iii.	What do you mean by command line argument? Program.	2 Marks 3 Marks	5

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