

[4]

- ii. Define union in C, what are its uses. How to declare Union, initialize the members of the union and access the members of the union, explain with example. **6** 02 02 02
- OR iii. Write a C language program to define structure containing course name, number of students and roll number. Read three records and display it. **6** 03 03 03
- Q.6 Attempt any two:
- i. Write a program for File open(), File write(), File Close(). **5** 03 03 03
- ii. Explain the dynamic memory allocation with example. **5** 02 02 02
- iii. 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. **5** 03 03 03

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Total No. of Questions: 6

Total No. of Printed Pages:4

Enrollment No.....



Faculty of Science/Engineering

End Sem Examination Dec 2024

CA3CO01 Problem Solving & Programming

Programme: BCA/

Branch/Specialisation: Computer

BCA-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.

- |   | Marks | BL | PO | CO | PSO |
|---|-------|----|----|----|-----|
| Q.1 i. Which of the following is correct for C programming language?  | 1     | 01 | 01 | 01 |     |
| (a) Scripting programming language  |       |    |    |    |     |
| (b) Object oriented programming language  |       |    |    |    |     |
| (c) Natural programming language  |       |    |    |    |     |
| (d) Structured programming language   |       |    |    |    |     |
| ii. Which of the following is not an advantage of a flowchart?  | 1     | 01 | 01 | 01 |     |
| (a) Better communication  |       |    |    |    |     |
| (b) Efficient coding  |       |    |    |    |     |
| (c) Systematic testing  |       |    |    |    |     |
| (d) Improper documentation  |       |    |    |    |     |
| iii. What will be the output of the following C code?   | 1     | 01 | 01 | 01 |     |
| <pre>#include &lt;stdio.h&gt; int main() {     int y = 10000;     int y = 34;     printf("Hello World! %d\n", y);     return 0; }</pre> |       |    |    |    |     |
| (a) Compile time error  |       |    |    |    |     |
| (b) Hello World! 34   |       |    |    |    |     |
| (c) Hello World! 1000   |       |    |    |    |     |
| (d) Hello World! followed by a junk value   |       |    |    |    |     |

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- iv. The format identifier '%i' is also used for which data type- **1** 01 01 01  
 (a) char (b) int  
 (c) float (d) double
- v. How do you initialize an array in C? **1** 01 01 01  
 (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. What will be the output of the program? **1** 01 01 01  

```
#include<stdio.h>
#include<string.h>
int main()
{
    printf("%d\n", strlen("123456"));
    return 0;
}
```

 (a) 6 (b) 12  
 (c) 7 (d) 2
- vii. Which operator connects the structure name to its member name? **1** 01 01 01  
 (a) –  
 (b) <-  
 (c) .  
 (d) Both (a) & (b)
- viii. What does the "size of" operator in C return for a union? **1** 01 01 01  
 (a) Total size of all union members  
 (b) Size of the largest member  
 (c) Size of the smallest member  
 (d) Size of the union itself
- ix. Which is an indirection operator among the following? **1** 01 01 01  
 (a) &  
 (b) \*  
 (c) ->  
 (d) .

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- x. What is the purpose of the "w" mode when opening a file in C? **1** 01 01 01  
 (a) To read data from the file  
 (b) To write data to the file, overwriting existing content  
 (c) To append data to the end of the file  
 (d) To create a new file
- Q.2 i. What is an algorithm? List any two characteristics of an algorithm. **2** 01 01 01  
 ii. Design a flowchart to find largest numbers among three numbers. **3** 03 03 03  
 iii. Explain the functions of compilers and interpreters. What is the difference between linkers and loaders? **5** 02 02 02
- OR iv. What is problem solving? Explain the steps of problem solving. **5** 02 02 02
- Q.3 i. How many types of operators we have in C language? What is operator's precedence and associativity? **2** 01 01 01  
 ii. Explain switch case statement with syntax and suitable example. What will happen if break is not used in switch case block? **8** 02 02 02
- OR iii. Explain goto statement with syntax. Construct a program to find whether given number is even or odd using goto statement. **8** 03 03 03
- Q.4 i. What is the concept of array? How many types of array we have in C language? Explain with examples. **3** 02 02 02  
 ii. What is string? Write a program to find the length of string without using strlen function. **7** 03 03 03
- OR iii. What is function in C language? Explain call by value and call by reference by program. **7** 02 02 02
- Q.5 i. What is a structure in C language? How it is different from array. How to access structure elements explain it with example. **4** 02 02 02

**Marking Scheme****CA3CO01 (T) Problem Solving & Programming (T)**

Q.1	i)	d. Structured programming language	<b>1</b>
	ii)	d. Improper documentation	<b>1</b>
	iii)		<b>1</b>
		<pre>#include &lt;stdio.h&gt; int main() {     int y = 10000;     int y = 34;     printf("Hello World! %d\n", y);     return 0; }</pre>	
		a) Compile time error	
	iv)	The format identifier '%i' is also used for which data type.	<b>1</b>
		b) int	
	v)	c) int arr[3] = {1,2,3};	<b>1</b>
	vi)	<pre>#include&lt;stdio.h&gt; #include&lt;string.h&gt; int main() {     printf("%d\n", strlen("123456"));     return 0; }</pre>	<b>1</b>
		a. 6	
Q.2	i.	What is an Algorithm?	<b>2</b>
		List any two characteristics of an algorithm.	<b>2</b>
	ii.	Design a flowchart to find largest numbers among three numbers.	<b>3</b>
		– 3 marks	
	iii.	Compilers and Interpreters	<b>5</b>
		Difference between Linkers and Loaders	<b>2</b>

OR	iv.	What is problem solving?	<b>5</b>
		Explain the steps of problem solving.	<b>4</b>
Q.3	i.	Types of operators	<b>2</b>
		Operator's precedence and associativity	<b>1.5</b>
	ii.	Explanation of Switch Case Statement.	<b>8</b>
		Syntax + Example	<b>2</b>
OR	iii.	If break is not used in switch case block	<b>3</b>
		Explanation of goto statement	<b>2</b>
	syntax	Construct program	<b>5</b>
			<b>1</b>
Q.4	i.	Concept of array	<b>3</b>
		Types of array	<b>2</b>
	ii.	What is String?	<b>7</b>
		Write a program to find the length of string without using strlen function.	<b>5</b>
OR	iii.	What is Function	<b>7</b>
		Explain call by value by program	<b>2.5</b>
		Explain call by reference by program.	<b>2.5</b>
			<b>2.5</b>
Q.5	i.	Structure in C language	<b>4</b>
		Difference from Array	<b>1</b>
	ii.	access Structure elements	<b>2</b>
		Union in C	<b>6</b>
OR	iii.	Its uses	<b>2</b>
		declare Union, initialize the members of the Union and access the members of the Union, explain with example	<b>3</b>
		program to	<b>6</b>
		define structure	<b>2</b>
Q.6	i.	Read 3 records and display it	<b>4</b>
			<b>2</b>
	ii.	Attempt any two:	<b>5</b>
		Program for File open(), File write(), File Close().	<b>5</b>
		Stepwise marking	<b>5</b>
		Dynamic memory allocation	<b>5</b>
		Explanation	<b>3</b>
		Example	<b>2</b>

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P.T.O.