Faculty of Science / Engineering
End Semester Examination May 2025
CA3CO01 Problem Solving & Programming

Programme	:	BCA / BCA-MCA (Integrated)	**Branch/Specialisation**	:	-
Duration	:	3 hours	**Maximum Marks**	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

		Marks	CO	BL
Section 1 (Answer all question(s))				

Q1. Which of the following is the first step in problem solving?   **1 1 1**
- ◉ Analysing the problem
- ○ Coding and implementation
- ○ Developing the solution
- ○ Testing the problem

Q2. What are the applications of C language?   **1 1 1**
- ○ Developing operating system
- ○ Developing Device Drivers
- ○ Developing Language Compilers
- ◉ All of these

Q3. The format specifier '%ld' is also used for _____ data type.   **1 1 1**
- ○ int
- ○ float
- ◉ long int
- ○ double

Q4. printf() is: **1 1 1**
- ○ Standard input function
- ○ Both input and output function
- ◉ Standard output function
- ○ None of these

Q5. What is the wrong way to initialize the array?   **1 1 1**
- ○ int num[6] = { 2, 4, 12, 5, 45, 5 };
- ◉ int n{3} = { 2, 4, 12};
- ○ int n[] = { 2, 4, 12, 5, 45, 5 };
- ○ int n[6] = { 2, 4, 12};

Q6. Which one is not a string predefined function?   **1 2 1**
- ○ strcpy()
- ◉ strcmt()
- ○ strcmp()
- ○ strcat()

Q7. The size of a union is determined by the size of the _____.   **1 2 1**
- ○ First member in the union
- ◉ The biggest member in the union
- ○ Last member in the union
- ○ Sum of the sizes of all members

Q8. What is a structure in C language?   **1 2 1**
- ○ A structure is a collection of elements that can be of same data type
- ○ A structure is a user define data type
- ○ A structure is a collection of elements that can be of different data type
- ◉ All of the these

Q9. Which is an indirection operator among the following?   **1 2 1**
- ○ &
- ○ ->
- ◉ *
- ○ .

Q10. Which of the following header files must necessarily be included to use dynamic memory allocation functions?   **1   2   1**

- ⦿ stdlib.h
- ◯ memory.h
- ◯ stdio.h
- ◯ dos.h

Section 2 (Answer all question(s))   **Marks CO BL**

Q11. Explain any two features of C Programming language.   **2   1   1**

Rubric	Marks
one mark for each correct features	2

Q12. What are the compiler, linker, and loader?   **3   1   1**

Rubric	Marks
one mark for each correct explanation (Compiler, linker, and loader)	3

Q13. (a)   Explain the different generation of programming languages.   **5   2   1**

Rubric	Marks
1 mark of each correct explanation of generation(maximum 5 generation)	5

(OR)

(b)   What is flowchart? Define the symbols used for it? Draw a flowchart to find largest of two numbers.

Rubric	Marks
1 (Flow chart)+2(symbol)+2(correct flow chart)	5

Section 3 (Answer all question(s))   **Marks CO BL**

Q14. What do you mean by variable declaration and definition? Explain by example.   **2   1   1**

Rubric	Marks
What do you mean by Variable declaration and definition(1 mark) Explain by example.(1mark)	2

Q15. Explain break, continue, exit() by example.   **3   2   2**

Rubric	Marks
1 break+1 continue+1 exit()	3

Q16. (a)   What do you mean by if-else statement? Explain its syntax with an example.   **5   2   1**

Rubric	Marks
What do you mean by if-else (3),+ correct syntax (1) +example (1)	5

(OR)

(b)   What is switch-case? Design a menu to perform all arithmetic operation by switch-case.

Rubric	Marks
What is switch-case (2)? Design a menu to perform all arithmetic operation by switch-case.(3)	5

Section 4 (Answer all question(s))   **Marks CO BL**

Q17. What is Array? Explain by example.   **3   2   2**

Rubric	Marks
What is Array (2) ? Explain by example.(1)	3

Q18. (a) Write a program to calculate factorial of a number using recursion.   **7   2   1**

Rubric	Marks
correct program to calculate factorial of a number using recursion(7)	7

(OR)

(b) Differentiate between call by value & call by reference with suitable example.

Rubric	Marks
Differentiate between call by value and call by reference (5 mark) with suitable example.(2 mark)	7

Section 5 (Answer all question(s))   **Marks CO BL**

Q19. What do you mean by union? Explain by an example.   **3   3   2**

Rubric	Marks
What do you mean by union (2)? Explain by an example.(1)	3

Q20. (a) Declare a structure called stud having the elements roll, maths, phy, chem(all integer), per(float)   **7   3   1**
and grade (array). Accept the values of roll, maths, phy, and chem, For 5 students from the user,
calculate the percentage and grade and print the data in the screen.

Rubric	Marks
7 mark of correct program	7

(OR)

(b) Define structure? State its applications & compare the same with union.

Rubric	Marks
What is Structure? (2) Applications of Structure (2) Structure VS union (3)	7

Section 6 (Answer any 2 question(s))   **Marks CO BL**

Q21. Differentiate between malloc() and calloc()?   **5   2   2**

Rubric	Marks
Differentiate between malloc() and calloc() ? (5 mark)	5

Q22. Write a C language program to add two numbers using pointer?   **5   3   3**

Rubric	Marks
Write a C language program to add two numbers using pointer ?(5)	5

Q23. What are the different dynamic memory allocation techniques?   **5   3   2**

Rubric	Marks
What are the different dynamic memory allocation techniques?(5)	5

******

******