



Sambal

Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD)
Re-accredited with 'A++' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination - November 2024

I Semester

Class : I UG
Major : BCA

Time : 3 Hours
Max. Marks : 100

23BCAC02 Problem Solving using C

Course Outcomes:

- CO1: Understand programming methodologies by learning algorithm and flowcharts.
- CO2: Obtain knowledge about the fundamentals of C programming.
- CO3: Implement different operations on arrays.
- CO4: Understand use of functions, pointers, structures and unions.
- CO5: Gain knowledge about the basics of file handling mechanism.

Part A

10 x 1 = 10

Choose the Correct Answer

1. A flowchart is primarily used to
a. Write code
b. Graphically represent an algorithm
c. Compile a program
d. Optimize memory usage
CO1K3
2. Which of the following is the first step in solving a problem using computers?
a. Coding the solution
b. Understanding and defining the problem
c. Debugging the program
d. Testing the solution
CO1K4
3. The C programming language was developed by
a. Bjarne Stroustrup
b. Dennis Ritchie
c. James Gosling
d. Guido van Rossum
CO2K5
4. In C, Which of the following is not a token?
a. Keyword
b. Constant
c. Identifier
d. Function
CO2K3
5. Arrays in C are stored
a. sequentially in memory
b. randomly in memory
c. inside functions only
d. in stack
CO3K3
6. Which of the following correctly declares an array in C?
a. `intarr(5);`
b. `intarr[];`
c. `intarr[5];`
d. `int[] arr;`
CO3K4
7. What is the correct way to call a function `foo` with two arguments in C?
a. `foo();`
b. `foo(int, int);`
c. `foo(x, y);`
d. `foo[x, y];`
CO4K5
8. What does 'passing by value' mean in C functions?
a. The address of the variable is passed
b. A copy of the variable is passed
c. The actual value is modified in the calling function
d. A pointer is passed
CO4K4
9. Which function is used to open a file in C?
a. `fread();`
b. `fwrite();`
c. `fopen();`
d. `fclose();`
CO5K5
10. Which mode is used to open a file for reading and writing in C?
a. "r"
b. "w"
c. "rw"
d. "r+"
CO5K1

Part B
Answer ALL questions
Each answer should not exceed 400 words or two pages

5 x 6 = 30

- 11.a. What are pseudocode's sequence, selection, and iteration control structures? Provide examples for each. CO1K6
(or)
- 11.b. Describe the steps involved in problem-solving using computers. CO1K5
- 12.a. Explain the structure of a C program with an example. CO2K8
(or)
- 12.b. Discuss the role of keywords, identifiers, constants, and variables in C. CO2K7
- 13.a. Explain the difference between arrays and strings in C with examples. CO3K3
(or)
- 13.b. Discuss the switch the statement in C. CO3K2
- 14.a. Differentiate between Structure and Union with examples. CO4K4
(or)
- 14.b. Explain the difference between passing by value and passing by reference in C with examples. CO4K5
- 15.a. Explain pointers in C. How are pointers used with arrays? CO5K2
(or)
- 15.b. Write a program to demonstrate how a function can return an array using pointers. CO5K1

Part C
Answer ALL questions
Each answer should not exceed 800 words or four pages

5 x 12 = 60

- 16.a. Discuss in detail the advantages and disadvantages of using flowcharts and pseudocode in algorithm design. CO1K6
(or)
- 16.b. Discuss the characteristics that help in efficient problem-solving and code optimization. CO1K4
- 17.a. Explain in detail the various operators available in C and how they are used in expressions. CO2K3
(or)
- 17.b. Compare and contrast control structures in C with appropriate examples for each. CO2K4
- 18.a. Discuss the initialization, declaration, and common operations on strings in C with detailed examples. CO3K5
(or)
- 18.b. Explain in detail the different types of arrays in C. How are multi-dimensional arrays declared and used with examples? CO3K5
- 19.a. Discuss in detail about function declaration, definition, and calling in detail with examples. CO4K1
(or)
- 19.b. Describe recursion and explain the difference between recursion and iteration. Write a program to find the Fibonacci sequence using recursion. CO4K3
- 20.a. Explain pointers to functions in C with an example. How can they be used for callback mechanisms? CO5K1
(or)
- 20.b. Describe the different modes for opening files in C. Write a program to read from a file and display its contents on the screen. CO5K2
