

Ajay Kumar Garg Engineering College, Ghaziabad
Department of Computer Science & Engineering
Pre-University Test

Course: B.Tech
Session: 2024-25
Subject: Programming for Problem Solving
Max Marks: 70

Semester: 2nd
Section: S11 – S20
Sub. Code: BCS-201
Time: 3Hrs.

OBE Remarks:

Q.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
CO No.	1	2	3	3	3	4	5	1	2	3	3	1	4	4	5	5	2
Bloom's Level	L4	L4	L2	L3	L2	L2	L3	L3	L4	L4	L4	L2	L2	L3	L4	L3	L2
Weightage CO4: 16										Weightage CO5: 16							

Note: Answer all the sections.

Section-A

A. Attempt all the parts.

(7×2 =14)

- Find the value of following expressions:
i) $10 >> 2$ ii) $20 << 2$
- Find the value of variable max in the following code: -
int a=10, b=20;
int max= (a>b)? a: b;
- Explain function prototype why it is required.
- Difference between structure and union with proper example.
- What is array. In which situation arrays are advantages over linked list.
- Explain the concept of recursive function.
- Write a c program to find area of circle using **command line argument**.

Section-B

B. Attempt Any three.

(3×7 = 21)

- How algorithm is different from flowchart. Write an algorithm to check number is Armstrong number or not.
- What is case control structure in C with example? What is the reason for using break? statement at the end of each case control block?
- Write a program in C language to **multiply 2 matrices of order n*n** each and print the resultant matrix along with the **transpose of the resultant matrix**.
- Write a program in C to create a database of fifty students to store personal details such as roll no, name and marks. Print all the details of student whose name is entered by user
- Discuss the differences in memory allocation, default value, scope, and lifetime of all storage classes in C. Write a C program to show how a static variable retains its value across multiple function calls.

Section-C

(5x7 = 35)

C. Attempt all the parts.

13. Attempt any one.

- a. Explain concept of call by value and call by reference with proper example.
- b. Write a C program for bubble Sort and explain its working with an example.

14. Attempt any one.

- a. Write the concept and C program for binary search. What are the advantages & disadvantages of Binary Search? Also write complexity for linear and binary search algorithm.
- b. Explain function and type of function in C give with proper examples of each type. Also differentiate between formal parameter vs actual parameter and how they are passed to function.

15. Attempt any one.

- a. How are strings represented in C give proper syntax and example? How are they different from character arrays?
- b. List any five standard library functions used for string handling in C. Explain each with syntax and example.

16. Attempt any one.

- a. Explain how pointers can be used with arrays and functions. Provide examples.
- b. Explain DMA in details. Write a C program to display dynamically allocate memory for an integer array using `malloc()`. Take user input and print the sum of elements.

17. Attempt any one.

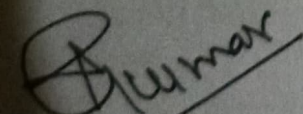
- a. Write a C program to print pattern.

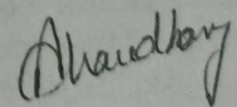
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- b. Explain operator and type of operator in C. Write a C program language to check character is a vowel or consonant.


Faculty Sign


HoD Sign