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63 (FY)SEM-1/MAJ1/BCAMAJ1014

2024

**COMPUTER APPLICATION**

Paper : BCAMAJ1014

**(Programming Fundamentals using C/C++)**

Full Marks : 50

Pass Marks : 20

Time : Two hours

***The figures in the margin indicate full marks for the questions.***

1. Choose an answer from each question :  
1×5=5
  - (a) What is the correct definition of a null pointer in C ?
    - (i) A pointer that points to memory address 0
    - (ii) A pointer that points to uninitialized memory
    - (iii) A pointer that points to the last element of an array
    - (iv) A pointer that points to garbage value

(b) Which function is used to read a string in C ?

- (i) gets()
- (ii) printf()
- (iii) scanf()
- (iv) puts()

(c) What is the difference between struct and union in C ?

- (i) Struct uses less memory than union
- (ii) Union allows multiple members to share the same memory location
- (iii) Struct can hold only one data type
- (iv) Union doesn't allocate any memory

(d) What is the default return type of main() in C ?

- (i) void
- (ii) int
- (iii) float
- (iv) char

(e) Which loop is guaranteed to execute at least once ?

- (i) for loop
- (ii) while loop
- (iii) do-while loop
- (iv) None of the above

2. Answer the following : **(any five)**  $2 \times 5 = 10$

- (a) What is keyword ?
- (b) What is recursion in C ?
- (c) What is actual and formal parameters ?
- (d) How arrays are initialized ?
- (e) What is the base address of an array.
- (f) Define the purpose of goto function.
- (g) How do you declare a pointer in C ?

3. Answer the following : **(any five)**  $5 \times 5 = 25$

- (a) Define anatomy of a function.
- (b) Write a C/C++ program to check an integer number is palindrome or not using function.
- (c) Write a C/C++ program to find the sum of diagonal and off diagonal elements separately.
- (d) Write a C/C++ program to add two integer matrices using function.
- (e) What is storage class of a variable ? Define all the categories of storage class.

- (f) What are call by value and call by reference. Define with example.
  - (g) Write a C/C++ program to sort n number using bubble sort (using function).
  - (h) Write a C/C++ program to search a number using linear search technique.
4. Answer the following : **(any one)**  $10 \times 1 = 10$
- (a) Give a detailed explanation of the classification of operators in C/C++, including examples for each category.
  - (b) Describe the memory allocation functions (malloc, calloc, realloc, and free), including how dynamic memory allocation works in C and the importance of free.
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