

Attempt all questions in brief.

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a.	Briefly differentiate between While and do-While loop.
b.	Differentiate between local and global variable.
c.	Explain type conversion in C.
d.	Mention any two advantages of using functions in C.
e.	Discuss the advantages of algorithm.
f.	Compare and contrast between compiler and interpreter.
g.	Mention the rules for variable naming in C.

a.	Draw a flowchart and write the algorithm for finding GCD of two numbers.
b.	Write a program in C to calculate the sum of digits of a 3 digit number using arithmetic operators. (Note: No loop should be used)
c.	Write a Program to print the following pattern. <div style="text-align: center;"> <pre> * *** ***** ***** </pre> </div>
d.	Write a program in C to print all Armstrong numbers from 1 to 500.
e.	Explain the call-by-value mechanism by using suitable example.

a.	What is a Computer? Draw a block diagram of a Computer and explain each of its components.
b.	Describe the various problem solving techniques.

Attempt any one part of the following.

a.	What are various data types used in C language? Illustrate their declaration and usage.
b.	Explain the standard input/output functions in C.

a.	Explain the role of precedence and associativity of an operator? Solve the expression based on operator precedence: $1+2*3/6-4$
b.	Explain logical operators with examples.

a.	Write a C program to find the roots of a quadratic equation using switch statement.
b.	Write a C program which reads 2 integer numbers and an operator and finds their sum, difference, multiplication and division separately based on the value of operator entered.

a.	Write a C program using a function prime_check() , to check whether a given number is prime. The function returns 1 if the number is prime or 0 otherwise.
b.	Explain the purpose of storage classes? Explain all storage classes with suitable examples.

- What will be the output of the following code

```
for(i=1; i<10;i++);
printf("%d", i);
```
- What is the use of flow chart?
- What do you mean by system software and application software?
- What is the task of a loader?

Attempt any *three* of the following:

- How do-while loop is different from while loop? Give the syntax and working of both the loops.
- What are the disadvantages of 1st generation computers?
- Draw a flow chart to find the sum of 1 to N.
- Write a function to find factorial of a number.
- Write a program in C to search a number in a given array of numbers.

Attempt any *one* part of the following:

- Write a program in c to count the number of characters in a string.
- What do you mean by type casting? Illustrate implicit type casting and explicit type casting with suitable example.

4. Attempt any *one* part of the following:

- Define algorithm. What are the attributes of a good algorithm?
- Write a program in C to print the pattern

```
A
A B
A B C
A B C D
A B C D E
```

Attempt any one part of the following:

- (a) Differentiate between compiler and interpreter.
- (b) What do you mean by precedence and associativity of operators? Explain with a suitable example.

7. Attempt any one part of the following:

- (a) Write a function to check an input number is prime or not. The function should return a value of 1 if the number is prime otherwise it should return 0.
- (b) Write the syntax of switch statement and explain its working. Illustrate with a suitable example.

Define / Explain the following :

- a) What are the basic functions performed by a computer?
- b) Compare primary memory and secondary memory.
- c) Write an algorithm to print sum of numbers from 1 to 10.
- d) What is a recursive function? Why it is used?
- e) What happens if you create a loop that never ends?
- f) What is the use of return statement?
- g) Evaluate the following expression if $a=11$, $b=9$ and $c=3$:
 $a < b \ \&\& \ a > c \ || \ (b+1 > c-1)$

Attempt any five of the following :

- a) Discuss characteristics and character set of C language.
- b) Define identifier. What are the rules for creating valid identifiers? Explain
- c) What do you mean by a storage class? Describe various storage classes with proper example.
- d) What is a programming language? Discuss first and second generation of languages with their respective advantages and disadvantages.
- e) Write a C program to check whether a triangle is right-angled or not.
- f) Discuss any five library functions used in C language.
- g) Differentiate between for, while and do-while loops with suitable example.
- h) Write a C program to print the following pattern:

```
A
BB
CCC
DDDD
EEEE
```

Attempt any two of the following:

- 3. What do you understand by the term data type? Describe various data types available in C language with proper example.
- 4. Define function. What are the advantages of using functions? Write a C program to interchange the contents of two variables using function.
- 5. Write a C program to enter marks of 5 subjects of a student and find its division (first, second, third and fail).

a. What is the use of a flow chart? List out the symbols used in a flow chart. Draw a flow chart to find whether the given year is a leap year or not. 10

b. How switch statement is different from else – if ladder?

Construct a program in C to print the below pattern.

```
*  
* *  
* * *  
* * * *  
* * * * *
```

The number of lines to print to be entered by the user.

3. Attempt any *one* part of the following:

a. Explain the different data types supported by C language? Explain primitive data types in terms of memory size, format specifier and range. 10

b. What do you mean by operator precedence and associativity? Explain all bitwise AND, bit-wise OR and bit-wise XOR operators with suitable example. 10

4. Attempt any *one* part of the following:

a. Write a program to check the input number is an Armstrong number or not. 10

b. Identify the use of modular programming? Write a program by using user define function to check given number is prime or not.

Prototype of function should be like this **int is_prime(int).**

Attempt any *one* part of the following:

(a) Define an Algorithm. Write the characteristics of a good algorithm.

(b) Explain the following with proper example:

(i) break

(ii) continue

(iii) goto

Discuss about the following operators in C language with example.

(i) Bitwise operators

(ii) Increment and decrement operators

(iii) Logical operators

Attempt any *one* part of the following:

(a) What is type conversion? Explain two types of conversion with suitable examples.

(b) Explain different categories of pre-processor directives used in C.

WAP to print the Fibonacci series up to 10 terms.

Draw the block diagram of Digital Computer and explain it in short.

Define Algorithm and Flowchart. Also make a difference between those two terms.

Attempt any four parts of the following : **4×5=20**

- (a) WAP to find whether a number is prime number or not.
- (b) WAP to check the given number is palindrome or not.
- (c) Explain the different types of operators available in 'C' language in short.
- (d) What is preprocessor? Explain the various type of preprocessor directives in short.
- (e) What is data type? Also explain the various data types available in 'C' using suitable example.
- (f) WAP to print:

1			*
2	2	or	* *
3	3	3	* * *

(a) What is an Operator ? Write different types of operators in C.

(b) What do you understand by C preprocessor ? Explain the purpose of at least four C-preprocessors.

Write a program to print the following pattern :

```
*   *   *   *   *   *   *   *
  *   *   *   *   *   *
    *   *   *   *
      *   *   *
        *
```

Draw flow chart to input 'n' numbers from user. Calculate sum of digits of all even numbers and display it.

What are bit wise operators in C ? What is their significance ? Illustrate them with suitable example.