Answer ALL Questions

PART – A (5 x 2 = 10 marks)

i. Classify the types of software and give an example for each.

ii. Specify the range of numbers that can be assigned to a variable of type ‘int’.

iii. Write the if...else equivalent for the expression x = (a > b)?a:b;

iv. How does structure differ from that of an array data type?

v. Write the syntax of C statement for opening a file in append mode.

PART – B (5 X 8 = 40 marks)

1. (a) Enumerate the list of components that form a computer system and write a brief note on their specific functions. (5)

(b) How many computers constitute the Internet of today? State the mechanism by which the computers are uniquely identified over the internet. (3)

(or)

2. (a) Convert and represent the decimal number, 2014 into its equivalent hexadecimal, octal and binary number systems. (5)

(b) Define the role of a compiler in computer programming. Mention any four high level languages. (3)

3. (a) What are the two types of complexity of a given algorithm? Name any algorithm that you know and specify its algorithmic complexity. (3)

(b) Write a C program that swaps the given two variables by (i) arithmetic method and (ii) logical method. (5)

(or)

4. (a) Write brief notes on the operator precedence of the C language. (3)
(b) State the difference between `getc()` and `scanf()` functions for input operation. Write a sequence of C statements to demonstrate the typecasting of variables.

5. (a) Draw a flow chart to depict nested `if...else` statements.
(b) Differentiate between entry and exit controlled loop control structures with suitable examples.

(or)

6. (a) What is a recursive function? Write a recursive function that calculates factorial of a given number.
(b) Does C support strings as a data type? What is the use of NULL character?

7. (a) What is a structure data type? Specify at least two ways of accessing members of a structure variable.
(b) Explain the use of following keywords: `sizeof` and `typedef`?

(or)

8. (a) What is the difference between accessing a variable by its name and accessing it through its pointer?
(b) Write a C program using pointers to determine the length of a character string.

9. (a) List and explain any four high level functions for handling file I/O.
(b) State the purpose of the variables `argc` and `argv` when used in command line arguments.

(or)

10. (a) What is the use of `free()` and `calloc()` functions?
(b) Define preprocessor. Explain the use of `#define` macro substitution with a suitable example.

PART – C (1 X 10 = 10 Marks)

11. Draw a neat sketch of flow chart to depict the program flow to compute average of given N numbers. Implement this program logic using arrays in C.

(or)

12. Write a C program that prompts the user for two files, each having a list of cities. The program must check whether the file contents are identical or not.