Q.P. Code :00897

[Time: $2\frac{1}{2}$ Hours]   [Marks:75]

Please check whether you have got the right question paper.

N.B:
1. **All** questions are **compulsory**.
2. Make **suitable assumptions** wherever necessary and **state the assumptions** made.
3. Answer to the **same question** must be **written together**.
4. Numbers to the **right** indicate **marks**.
5. Draw **neat labeled diagrams** wherever **necessary**.
6. Use of **Non-programmable** calculators is **allowed**.

Q.1   Attempt *any three* of the following: (15)

a. Explain program development cycle with the help of a diagram.

b. What is variable? How does an array variable differ from an ordinary variable?

c. Draw a flowchart for finding factorial of a number.

d. Name and describe the four basic data types in C.

e Explain different types of programming languages.

f. What are the three classes of statements in C? Describe the composition of each.

Q.2   Attempt *any three* of the following: (15)

a. Explain the concept of operator precedence and associativity. What are the relative precedence and associability of the arithmetic operators?

b. Compare the gets and puts functions with scanf and printf statements.

c. Describe two different way to utilize the increment and decrement operators. Explain with example.

d. What is the purpose of the control string in a scanf function? Summarize the meaning of the most commonly used conversion characters within the control string of a scanf function.

e Write a C program to find the maximum of two numbers using conditional operators.

f. How putchar and getchar functions are used within a C program? Explain with the help of example.

Q.3   Attempt *any three* of the following: (15)

a. Write the use of break, continue and goto statements.

b. Write a C program to find the sum of natural numbers using recursive function.

c. Define looping. Compare different types of looping statements.

d. Write a short note on C library functions.

e Write a C program to check whether the entered number is Armstrong or not.

f. Explain two different ways to pass arguments to a function with the help of example.

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Q.4   Attempt *any three* of the following:

(15)

a. Write the similarities and differences between macros and functions.
b. Write a C program the performs addition of two matrices.
c. Compare automatic and external variable.
d. Write the purpose of the most commonly used C preprocessor directives.
e. Write a C program to demonstrate the use of strlen, strcpy, strcmp and stcat string functions.
f. What is static variable? How it is defined and initialized in a single-file program?

Q.4   Attempt *any three* of the following:

(15)

a. Write a short note on array of pointers.
b. Define a structure book containing 3 members called title, author and price. Write a C program that would assign values to the individual members and display the same.
c. When transferring one function to another, what is meant by the guest and host function? Explain with help of an example.
d. Write the difference between array and structure.
e. Write a C program addition and subtraction of two pointer variables.
f. Explain how a union can be declared in C and for what kinds of applications are unions useful?