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3 (Sem-5/CBCS) STA HC 2

2024

STATISTICS

(Honours Core)

Paper : STA-HC-5026

**(Statistical Computing using
C / C++ Programming)**

Full Marks : 60

Time : Three hours

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

1. Answer the following questions : $1 \times 7 = 7$
 - (a) An identifier can begin with (under score). (State True **or** False)
 - (b) C language has been developed by . (Fill in the blank)
 - (c) One nibble is equal to bits. (Fill in the blank)
 - (d) If X is an integer variable, then $X = 7/2$ will return value . (Fill in the blank)

Contd.

- (e) In C language, a comment starts with the symbol _____. (Fill in the blank)
- (f) The line from which a program executive begins is _____. (Fill in the blank)
- (g) In C language, an array of characters is called _____. (Fill in the blank)

2. Answer the following questions : $2 \times 4 = 8$

- (a) Write down the logical operators available in C language.
- (b) What is an expression in C ? Convert the following mathematical expression into C expression

$$\sqrt{1+x} + \frac{\log \cos 2x}{1+|y|}$$

- (c) Write down the operator precedence for arithmetic operators in C language.
- (d) What is a header file ? Explain the need of the header file
include < stdio . h >

3. Answer **any three** questions from the following : $5 \times 3 = 15$

- (a) What is a constant ? Discuss about the constants used in C language with example.
- (b) Write a C program to find the area and circumference of a circle of radius r .

- (c) Write a C program to evaluate the series

$$S = 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots \text{ upto 15 terms.}$$

- (d) Define 'loop' in C program. What are the different loop control statements in C language ? Distinguish between 'while' and 'do-while' statement in C language.

- (e) Write a C program to find out the transpose of an $n \times n$ matrix.

4. Answer **any three** questions from the following : $10 \times 3 = 30$

- (a) (i) Write a note on input and output functions used in C language with example. 4

- (ii) Write a C program to find the root of a quadratic equation
 $ax^2 + bx + c = 0$, for all combinations of a, b , and c . 6

- (b) (i) Write a note on relational operators present in C language. 3

- (ii) Write a C program to obtain an approximate value of the integral

$$\int_0^2 \frac{1}{1+x} dx \text{ by using Trapezoidal rule. 7}$$

(c) (i) Write an algorithm to find out the sum of n natural numbers. 3

(ii) Write a C program to find the coefficient of variation of n observations. 7

(d) (i) What is the nested if-else statement in C language? Explain with an example. 3+3=6

(ii) Write briefly about the "for" loop used in C language. Give example. 4

(e) (i) Write a note on overflow and underflow of data in C program. 3

(ii) Let $(x_1, y_1), (x_2, y_2), \dots, (x_n, y_n)$ be n observations of a bivariate distribution. Write a C program to find the regression coefficient. 7

(f) (i) Write a note on initialization of arrays in C language. 4

(ii) Write a C program to print the smallest value in a given array along with its position in the given array. 6