TDC (CBCS) Odd Semester Exam., 2022

STATISTICS

(3rd Semester)

Course No. : STSSEC-301T

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

Honours students will answer Option—A and
Pass students will answer Option—B

OPTION—A

(For Honours Students)

Course No. : STSSEC-301T (A)

(Statistical Data Analysis using R)

UNIT—I

1. Answer any *three* of the following questions : 1×3=3

(a) What does 'ylab' indicate in *R* ?

(b) What is the command of stem leaf in *R* ?

(c) What is the function of pie diagram in *R*?

(d) Write the *R* function to draw a histogram.

2. Answer any *one* of the following questions : 2

(a) Write the programme in *R* to find the minimum value from the following :

X : 8, 2, 3, 9, 8, 4

(b) Write the basic syntax to create a box plot in *R*, describing all the parameters.

3. Answer any *one* of the following questions : 5

(a) Write a programme in *R* to draw a scattered plot for the following data :

x	:	3	5	7	9	11
y	:	5	12	15	9	11

(b) Write a note on cumulative frequency curve of 'less than' type and 'more than' type.

UNIT—II

4. Answer any *three* of the following questions : 1×3=3

(a) Write a function in *R* to find median.

(b) Which measure of central tendency is used to find 'stock indices'?

(c) State the function of variance in *R*.

(d) What is lm() function in *R*?

5. Answer any *one* of the following questions : 2

(a) Write a programme in *R* to find the standard deviation from the following data :

X : 2, 6, 4, 9, 8

(b) Define mean deviation.

6. Answer any *one* of the following questions : 5

(a) Explaining all the commands, write a programme in *R* to find the Karl Pearson's correlation coefficient between two variables (use hypothetical data).

(b) Write a note on skewness.

UNIT—III

7. Answer any *three* of the following questions : 1×3=3

(a) Write the function in *R* to generate a 'random number' whose distribution is normal.

(b) Why are normal equations used?

(c) What is the function used to plot an exponential curve in *R* programming?

(d) Why is line() function used in *R*?

8. Answer any *one* of the following questions : 2

(a) What are the meanings of *(i)* pnorm (0, 0, 1) = 0·5 and *(ii)* dnorm (0, 0, 1) = 0·39894 in *R*?

(b) What is the function used in *R* to draw random samples from a given population with or without replacement?

9. Answer any *one* of the following questions : 5

(a) What does runif() function indicate in *R*? Write a programme in *R* using runif() function. Write the difference between runif() function and sample() function in *R*.

(b) How can ggdistribution be used to plot a normal distribution? Explain with a programme.

UNIT—IV

10. Answer any *three* of the following questions : 1×3=3

(a) State the function to import data in *R*.

(b) How does data() function help in *R*?

(c) What does read() function do in *R*?

(d) What does summary() function explain in *R*?

11. Answer any *one* of the following questions : 2

(a) What is the use of scan() function in *R*?

(b) How to replace (3, 2)th element of a 3×3 data matrix in *R*?

12. Answer any *one* of the following questions : 5

(a) Explain how data from an Excel file can be imported to *R*.

(b) Stating some uses, define data cleaning. Write the steps to clean data.

UNIT—V

13. Answer any *three* of the following questions : 1×3=3

(a) Write fiducial limit of sample mean ($\bar{x}$) at α% level of significance.

(b) What is the *R* function of *t*-test for single mean?

(c) What does var.test() function indicate in *R* programming?

(d) What is function of χ^2-test in *R*?

14. Answer any *one* of the following questions : 2

(a) Define ρ value.

(b) Write down the syntax of *t*-test for difference of means.

15. Answer any *one* of the following questions : 5

(a) Write a programme in *R* to test the difference of means of two populations using hypothetical data.

(b) A manufacturer claims that at least 95% of the equipment which is supplied in a factory were not faulty. An experiment of a sample of 200 pieces revealed that 18 were faulty. Test at 5% level of significance about the claim.

OPTION—B

(For Pass Students)

Course No. : STSSEC–301T (B)

(Statistical Computing using C)

UNIT—I

1. Answer any *three* of the following as directed : 1×3=3

(a) What is the purpose of main() function in C ?

(b) Every line in a C program should end with a semicolon.

(State True or False)

(c) What are constants in C ?

(d) A global variable is also known as _____ variable.

(Fill in the blank)

2. Answer any *one* of the following questions : 2

(a) How can we declare a variable in C ? Give examples.

(b) Distinguish between initialization and assignment of variables.

3. Answer any *one* of the following questions : 5

(a) Describe briefly the structure of a C program.

(b) Describe in brief the data types in C.

UNIT—II

4. Answer any *three* of the following as directed : 1×3=3

(a) An expression that combines two or more relational expressions is termed as _____ expression.

(Fill in the blank)

(b) All arithmetic operators have the same level of precedence.

(State True or False)

(c) Convert the following algebraic expression into equivalent C statement :

$$Z = \frac{(X+3)X^3}{(Y-4)(Y+5)}$$

(d) What is the purpose of scanf function?

5. Answer any *one* of the following questions : 2

(a) What are library functions? Give examples.

(b) What is conditional operator in C?

6. Answer any *one* of the following questions : 5

(a) Describe briefly the various types of operator in C.

(b) Write a program in C to find the average of three numbers.

UNIT—III

7. Answer any *three* of the following as directed : 1×3=3

(a) The _____ statement when executed in a switch statement causes immediate exit from the structure.

(Fill in the blank)

(b) Each expression in the else if must test the same variable.

(State True or False)

(c) What do you mean by looping in C?

(d) The _____ statement is used to skip a part of the statements in a loop.

(Fill in the blank)

8. Answer any *one* of the following questions : 2

(a) Describe the use of goto statement in C.

(b) What is the general form of 'If-else' statement?

9. Answer any *one* of the following questions : 5

(a) Describe briefly the various loop control statements in C.

(b) Describe the 'switch' statement in C with example.

UNIT—IV

10. Answer any *three* of the following as directed : 1×3=3

(a) The variable used as a subscript in an array is popularly known as ____ variable.

(Fill in the blank)

(b) An array can store infinite data of similar type.

(State True or False)

(c) A variable declared inside a function is called ____.

(Fill in the blank)

(d) A function that calls itself is known as a ____ function.

(Fill in the blank)

11. Answer any *one* of the following questions : 2

(a) Define recursion. Give example.

(b) How do we declare a function in C program?

12. Answer any *one* of the following questions : 5

(a) Write some advantages of using functions in a C program.

(b) What are the three aspects of a C function? What are the types of functions in C programming?

UNIT—V

13. Answer any *three* of the following as directed : 1×3=3

(a) Which library function can be used to find the square root of a number?

(b) What is the purpose of rand() function in C?

(c) How to input order of the matrix in C?

(d) We can find mean of a set of observations using C program.

(State True or False)

14. Answer any *one* of the following questions : 2

(a) Write C equivalent expression for computing the geometric mean and harmonic mean of two variables a and b.

(b) Distinguish between rand() and srand() functions in C.

15. Answer any *one* of the following questions : 5

(a) Write a program in C to compute the variance of n numbers.

(b) Write a program in C to find the median of a set of observations.

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