28/11/18 (Morning)

This question paper contains 5 printed pages.

Your Roll No. .....

S. No. of Paper	: **150**	**I**
Unique Paper Code	: **42353503**	
Name of the Paper	: **Statistical Software R**	
Name of the Course	: **B.Sc. (Math. Sc.) / B.Sc. (Prog.) : SEC**	
Semester	: **V**	
Duration	: **2 hours**	
Maximum Marks	: **38**	

(Write your Roll No. on the top immediately on receipt of this question paper.)

All questions are compulsory.

All commands should be written using language R.

1. Do any *four* of the following: 1×4

   State whether the following statements are true or false:

   (i) R follows the BODMAS rule for the calculation of mathematical expressions.

   (ii) c( ) command is easier than scan( ) command.

   (iii) rm( ) is used to find the variables defined.

   (vi) getwd( ) and setwd( ) are same commands.

   (v) sort( ) command can perform on an entire data frame.

2. Do any *six* of the following: 1×6

   Fill in the blanks:

   (i) table( ) command shows the ..... of the data. (frequency/density)

   (ii) How many columns are present in a basis stem and leaf plot? (two/three)

P. T. O.

(iii) ..... command is used to make bar charts. (boxplot( ) / barplot( ))

(iv) ..... command is used to generate a sequence of 10 random numbers. (seq(10) / rseq(10))

(v) names( ) command is used for viewing ..... (rows/columns)

(vi) To generate ten Poisson distributions with mean lemda=1, we use command:

(rpois(10,lemda=1), qpois(1,lemda=10)).

(vii) $ command is used for ..... (copy a data, extract from a data).

3. Do the following questions: 2x8

(a) Write commands for the following:

(i) To remove all the variables beginning with 'e' defined.

(ii) To save the variables a=3, b=10 and c=5 in a different file.

(b) Write command to compute:

(i) $\frac{2+100}{5+e}$

(ii) $\tan^{-1}(1)$ in degree.

(c) Write the difference between lapply and sapply.

(d) Create scatter plot for two dimensional data with *one* example.

(e) Consider a matrix X:

	Q1	Q2	Q3	Q4
R1	Jan	Apr	Jul	Oct
R2	Feb	May	Aug	Nov
R3	Mar	Jun	Sep	Dec

(i) Write command to change the names of rows with a, b, c and names of columns with A, B, C, D respectively.

(ii) Print all items of 2nd column.

(f) Rearrange the data in increasing order and draw a stem and leaf plot where data are:

X=3, 5, 7, 5, 3, 2, 6, 8, 5, 6, 9

(g) Make a score data file:

81	81	96	77
95	98	73	83
92	79	82	93
80	86	89	60
79	62	74	60

Find the range, mean, median, standard deviations.

(h) By using data1 = 3, 5, 7, 6, 9, 2, 7, 1, write a sequence of items of data1 with:

(i) only even positioned items.

(ii) only odd positioned items.

4. Do any *four* of the following: 3×4

P. T. O.

(a) Write the commands for the following:

(i) How to make a comment in R?

(ii) Create a vector

y: 12, 7. 5, 3, 4.2, 18, −21, NA, 6, NA.

(iii) Find the length of vector y.

(iv) Find mean of vector y by dropping NA values.

(v) Find the quartile of vector y.

(b) Consider the matrix:
>Marks

	Physics	Chemistry	Maths
Jim	73	84	82
Sui	75	68	58
Andy	90	85	73
Jojo	69	63	71
Pi	81	84	73

(i) Find the mean of the third column of Marks.

(ii) Find the median of all columns of Marks.

(iii) Find the column means of Marks.

(iv) Create a table of matrix Marks.

(v) How can you make a scatter plot of Physics *versus* Maths and display a line of best-fit?

(c) Make a dataframe file:

81	81	96
95	98	73
92	79	82
80	86	89
79	62	NA

Then convert this data into a matrix.

(d) If a data2 file is given as:

data2=3, 5, 8, 7, 9, 6, 8, 6, 3, 5, 4, 7, 3, 6, 2,

Which test would you apply to compare this sample to normal distribution? Also write command.

(e) Write a program in R for the following:

(i) Consider the given data:

x	5	6	13	4	12	10	16	5
y	4	4	16	18	19	12	16	20

(ii) Draw a scatter plot of data points (x, y).

(iii) Find correlation between and x and y.

(iv) Compute a line of best fit for the data.

(v) Add the line of best fit to the scatter plot.