

(h) 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

Draw a stem leaf plot.

4. Do any *four* of the following :

3×4

(a) Consider the following course grades of randomly selected students :

40	38	20	31
26	35	38	21
50	33	29	40
42	46	20	48
43	48	41	27

Write commands for :

- (i) Putting data into a variable  $x$
- (ii) Creating a scatter plot of  $x$
- (iii) Creating a box plot of  $x$
- (iv) Creating a stem and leaf plot of  $x$
- (v) Creating a normal probability plot of  $x$ .

This question paper contains 4+2 printed pages]

Roll No.

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S. No. of Question Paper : 1454

Unique Paper Code : 62353505

Name of the Paper : Statistical Software-R

Name of the Course : B.A. (Prog.) Mathematics : 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 in software R.

1. Do any *five* of the following :

5×1

State whether the following statements are true or false.

The commands for the following mathematical expressions are :

(i)  $\sqrt{2} + 3$  is `sq(2) + 3`

(ii)  $4!$  is `fact(4)`

(iii)  $\tan^{-1} x$  is `atan(x)`

(iv)  $|x| + 3$  is `abs(x) + 3`

(v) Is R language key sensitive

(vi) If `datap` is a ten item vector then `datap[1 : 3]` command show only one and third items.

2. Do any *five* of the following : 5×1

Fill in the blanks :

- (i) ..... command is used to plot histogram. (hist( )/  
histo( ))
- (ii) The command to produce five basic quartiles  
is ..... (quartile( )/quantile( ))
- (iii) If you have an xtabs object "Y", then write the command  
to resemble it into a data frame .....  
(as.data.frame(as.matrix(Y))/as.data.frame(Y)).
- (iv) Data frames are ..... dimensional. (one/two)
- (v) To generate ten random numbers uniformly, we use  
command ..... (runif(10)/rnorm(10)).
- (vi) The Kolmogorov-Smirnov test is applied for compare  
..... distributions (within one/two)

3. (a) Write the commands for the following : 2×8

- (i)  $\sin(30^\circ)$
- (ii) last 150 commands executed.
- (b) (i) Using scan command create simple data items  
containing the text stating the following days of  
the week :  
Mon Tue Wed Thu Fri Sat.
- (ii) Write a command to remove all the elements  
containing 'r'.

- (c) Why should you use R language for statistical work ?
- (d) Generate a  $4 \times 4$  matrix and name it as MAT. Then find  
the mean of the second row of the matrix MAT. Also,  
find the row sums of the same matrix.
- (e) Write syntax to generate 'n' random values of :
- (i) normal distribution
- (ii) uniform distribution.
- (f) Describe density function with  $3 \times 4$  matrix example.
- (g) A data file is given with name bird :

	A	B	C	D	E
X	12	14	15	40	10
Y	08	04	07	09	11
Z	30	20	25	10	35

- (i) Extract third columns
- (ii) Transpose bird data
- (iii) Find max and min items
- (iv) Make histogram of X

- (b) The following data gives, for each amount by which an elastic band is stretched over the end of a ruler, the distance that the band moved when released :

Stretch	Distance
46	148
54	182
48	173
50	166
44	109
42	141
52	166

- (i) Create data frame of the above data.
- (ii) Convert the data frame into matrix.
- (iii) Convert the data frame into table.
- (iv) Draw box plot of the given data.
- (v) Label the axis of the plot.

- (c) (i) Create a sample of 50 numbers which are incremented by 1.
- (ii) Create the binomial distribution of 50 numbers with probability 0.5.
- (iii) Find the probability of getting 26 or less heads from a toss of a coin. (using binomial distribution)
- (iv) How many heads will have a probability of 0.25 will come out when a coin is tossed 51 times ?
- (v) Find 8 random values from a sample of 150 with probability of 0.4. (using binomial distribution).
- (d) Generate 50 random variable using Poisson distribution, binomial distribution and plot one distribution to another.
- (e) If a data2 file is given :
- data2 = 3, 5, 8, 7, 9, 6, 8, 6, 3, 5, 4, 7, 3, 6, 2,
- Which test apply to compare this sample to normal distribution also write command.