

- (i) Read the marks of 20 students in statistics, computer and mathematics through console.
- (ii) Create the data frame containing Roll No., Name, Marks in each subject and percentage.
- (iii) Calculate the correlation between scores in different subjects.
- (iv) Plot a scatter diagram to show relation of scores obtained in respect of three subjects. 10×2

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This question paper contains 4 printed pages.

Morning

Your Roll No.

S. No. of Paper : 522 I

Unique Paper Code : 32373902

Name of the Paper : Statistical Data Analysis Using R

Name of the Course : B.Sc. (Hons.) Statistics : SEC

Semester : III

Duration : 2 hours

Maximum Marks : 50

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

Attempt six questions in all. Section A is compulsory.

Attempt any two questions each from

Section B and Section C.

Section A

1. (a) CRAN in R stands for _____.
- (b) A command used to extract 6th element from a vector x of 8 elements is _____.
- (c) Graphical window can be divided into several parts using the graphical instruction _____.
- (d) Write the output:

P. T. O.

```
> X <- -1:6 ; print(X)
```

```
> X <- 1:4*5 ; print(X)
```

(e) Explain the function locator ($n=2$). 1×5

2. (a) How can you use customized x -axis limits and y -axis limits in a graphical representation? Give example.
- (b) What are high level and low level plots, why are they so called? Name two each of high level and low level plot.
- (c) An unbiased die is rolled five times. Write a R-command to get the probability of three or more rolls of four.
- (d) How do you extract data from a data frame defined in R?
- (e) Write a R-code to plot a curve of the function:

$$f(x) = 3x^5 - 5x^3 + 2x ; -1.25 < x < 1.25$$

2×5

Section B

Attempt any two questions.

3. Write an R-code to draw a histogram for a grouped frequency distribution with equal class intervals. Superimpose frequency polygon curve on the histogram.

4. What are the five basic classes of objects in R? Give examples to show how values are assigned to each class of variable.
5. Write an R-code to generate a random sample of size 100 following Normal distribution with mean = 10 and variance = 4. Use the generated sample to compute 95% confidence interval for mean. 7.5×2

Section C

Attempt any two questions.

6. Write an R-code to apply t -test for difference of means when the samples are drawn from same population at 10% level of significance. Interpret the results as obtained in R. Also calculate mean, median, mode and variance for both the samples used in the above t -test.
7. Write an R-code for the following:
- (i) Fit a linear regression line $y = \beta_0 + \beta_1 x$ for the given data (x, y)
 - (ii) Estimate y and residual vector
 - (iii) Create a data frame to store vectors x , estimated y and residual
 - (iv) Plot the regression line of y on x and the given data (x, y) on the same plot.
8. Write an R-code for the following: