

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T-2 EXAMINATION- April, 2019

B.Tech. [8th Semester]

MAX. MARKS: 25

COURSE NAME: R PROGRAMMING AND APPLICATIONS

COURSE CREDITS: 03

CODE: 18B1WCI842

MAX. TIME: 1.5 Hr

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

[5 Marks]

1. (a) Which one of the following is least sensitive to outliers?

(i) Mean (ii) Median (iii) Mode (iv) None of the above

(b) Which of the following is not a possible value of the correlation coefficient?

(i) 0 (ii) +0.15 (iii) +1.5 (iv) -0.5

(c) Class of optimization problems WITH NO constraints are known as

(i) constrained optimization problems (ii) unconstrained optimization problems

(iii) linear constrained optimization problems (iv) none of the above

(d) A residual is defined as the difference between the

i. Measured value of independent variable and predicted value of independent variable for every sample

ii. Measured value of dependent variable and predicted value of dependent variable for every sample

iii. Measured value of dependent variable and predicted value of independent variable for every sample

iv. Measured value of independent variable and predicted value of dependent variable for every sample

(e) The coefficient of correlation between variables X and Y will have a positive sign when

(i) X is increasing, and Y is decreasing (ii) X is increasing, and Y is increasing

(iii) X is decreasing, and Y is increasing (iv) There is no change in X and Y

2. Why do we do data distribution? Name any three common types of distributions used in R Programming. Write the name of the command used for the following purposes:-

(a) Generates n random numbers from the normal distribution with mean 0 and standard deviation of 1.

(b) Returns the probability of the quantile q.

(c) Gives the density function for value x. [5 Marks]

3. Look at the below mentioned bfs data object. Construct the contingency tables using both **table ()** and **ftable()** commands. How can you get one command to produce the same layout of the table as the other and what is the key difference between these results ?

Arable	1	0	0	0	0	2	2	2	1	1	0
Grass	2	3	2	1	1	1	0	0	1	0	1
Health	0	0	0	1	1	2	1	2	1	0	0

[5 Marks]

4. Consider the following data for Age and Weight. Carry out a two sample U-test on the two samples in the Age Weight Data object (You need to specify the commands used for the same as well). Use the summary command to evaluate the various parameters. What is use of doing the hypothesis testing on the data sets. Why we use the t-test and U-test on the samples?

Age	30	35	40	45	50	55
Weight	65	75	75	80	75	70

[5 Marks]

5. What is the significance of correlation and covariance in a dataset. Write down the command for calculating the correlation and covariance in a dataset in R Programming. Calculate the simple correlation for the data set provided in Q.N. 4 above. What kind of test we apply for the association relationship in a data set ? [5 Marks]

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