

Total No. of Questions : 5]

PC2981

[6380]-57

S.Y.M.B.A.

SEAT No.:

[Total No. of Pages :2

**304-BA-SC-BA-03 : ADVANCED STATISTICAL METHODS
USING R**

(2019 Pattern) (Semester- III)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Make appropriate assumptions wherever required.*

Q1) Answer the following questions (Any Five)

[10]

- a) State assumptions of multiple regression analysis.
- b) Define statistical modeling.
- c) Define aov () function.
- d) Define predictive analytics.
- e) Write a function to obtain the transpose of a matrix in R.
- f) Enlist basic statistical functions in R.
- g) What is adjusted R² in regression analysis?
- h) Mention two methods of dimension reduction.

Q2) Answer the following questions (Any Two)

[10]

- a) Discuss the application of Bayes theorem in data science.
- b) Explain Z test of hypothesis testing. Write the syntax and explain in detail.
- c) Define probability. Explain any two functions of probability distribution.

Q3) Answer the following question (Any One).

[10]

- a) Consider the Product marketing database and write R code for descriptive and predictive data analysis functions.
- b) What is the difference between the functions apply (), lapply (), sapply (), and tapply ()?

P.T.O.

Q4) Answer the following question (Any One) [10]

- a) What types of data plots can be created in R? Explain common and advanced types of data plots.
- b) Explain the important components of a time series. How does one forecast an ARIMA model in time series analysis?

Q5) Answer the following question (Any One) [10]

- a) What is difference between autocorrelation function (ACF) and partial autocorrelation (PACF) function. Explain how autocorrelation function identifies lags in time series data.
- b) What do you mean by dimension reduction? Explain linear discrimination analysis (LDA) with syntax. Also explain application of LDA in marketing domain.

Total No. of Questions : 5]

SEAT No. :

P-7961

[6118]-57

M.B.A.

304BA : SC-BA-03 - ADVANCED STATISTICAL METHOD
USING R

(2019 Pattern) (Semester - III)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) All questions carry equal marks.

Q1) Answer the following questions (Any Five) :

[10]

- a) Define Null and alternate hypothesis.
- b) What is ROC curve?
- c) State the significance of correlation analysis.
- d) Define clustering in Data Mining.
- e) Recite the concept of one way ANOVA.
- f) Recall seasonality in time series data.
- g) Define dimension reduction.
- h) Identify any two types of tests used to compare means of two samples.

Q2) Answer the following questions (Any Two) :

[10]

- a) Elaborate Autoregressive Integrated moving average model in time series.
- b) Discuss the concept of linear regression. List the parameters to evaluate linear regression model
- c) Elaborate conditional probability with an example.

Q3) Answer the following questions (Any one) :

[10]

- a) Explain t-test of hypothesis testing. Write syntax in detail.
- b) Discuss MLR (Multiple Linear Regression) in detail which function is used to perform MLR in R.

P.T.O.

Q4) Answer the following questions (Any one) : [10]

- a) What is confusion matrix? How confusion matrix can be used to evaluate the accuracy of the model?
- b) Discuss the concept of odds and probabilities in Logistic regression. How ROC curve can be used to evaluate the accuracy of Logistic model.

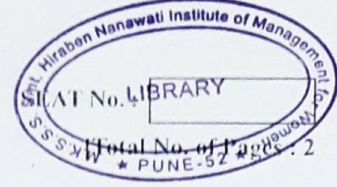
Q5) Answer the following questions (Any one) : [10]

- a) Describe principal component and factor analysis in detail.
- b) Describe Linear Discriminant Analysis (LDA). Write R code for LDA.

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Total No. of Questions : 5]

P-3779



[6025]-57

M.B.A.

304 - BA - SC -BA-03 : ADVANCED STATISTICAL METHODS
USING R

(2019 Pattern) (Semester - III)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Each question carries 10 marks.

Q1) Solve any Five of the following :

[5 × 2 = 10]

- a) Define Probability and give an example.
- b) State assumptions of multiple regression analysis.
- c) What is autocorrelation in time series?
- d) Mention two methods of dimension reduction.
- e) Sketch classification table in logistic regression.
- f) Enlist models which are both regression and classification in machine learning.
- g) Define null and alternative hypothesis.
- h) Write properties of the Normal Distribution.

Q2) Solve any two of the following :

[2 × 5 = 10]

- a) Describe test procedure for testing significance of correlation coefficient.
- b) Explain linear discriminant analysis model.
- c) Discuss the application of Bayes theorem in data science.

P.T.O.

Q3) Solve any one of the following :

[1 × 10 = 10]

- a) Describe the procedure of one way ANOVA with example.
- b) Discuss the Normal distribution and its applications in statistical analysis.

Q4) Solve any one of the following :

[1 × 10 = 10]

- a) Explain the important components of a time series. Describe Holt-Winters smoothing procedure.
- b) Differentiate between supervised and unsupervised machine learning with example.

Q5) Solve any one of the following :

[1 × 10 = 10]

- a) Explain ARIMA model. How does one forecast an ARIMA model in time series analysis?
- b) Critically evaluate linear regression and logistic regression technique.



Total No. of Questions : 5]

SEAT No. :

PA-3678

[5946]- 317

[Total No. of Pages : 2

S.Y.M.B.A.

**304 - BA-SC-BA-03 : ADVANCED STATISTICAL METHODS
USING R**

(2019 CBCS Pattern) (Semester - III)

Time : 2½ hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Make appropriate assumptions wherever required.*

Q1) Answer the following questions (Any Five)

[10]

- a) Enlist basic statistical functions in R.
- b) What is difference between parametric and non parametric tests?
- c) Define predictive analytics?
- d) Explain pbinom () function in R.
- e) How do you interpret p value in hypothesis testing?
- f) Write a function to get a list of all the packages installed in R.
- g) Write a function to obtain the transpose of a matrix in R?
- h) What is the purpose of regression analysis in R?

Q2) Answer the following questions (Any Two)

[10]

- a) Explain T-test of hypothesis testing in R. Write syntax and explain in detail.
- b) Define probability. Explain any two functions of probability distribution.
- c) What is linear regression? What do you mean by dependent and independent variables? What is difference between linear & multiple regression?

P.T.O.

Q3) Answer the following question (Any one).

[10]

- a) Examine ANOVA in R? State the assumptions and explain one way ANOVA in detail. Also state benefits of ANOVA.
- b) What do you mean by dimension reduction? Explain linear discrimination analysis (LDA) with syntax. Also explain application of LDA in marketing domain.

Q4) Answer the following question (Any One)

[10]

- a) Describe descriptive analytics in R. Explain any three functions of descriptive analytics in R.
- b) What is logistics regression in R? Assume suitable data and explain how do you interpret regression coefficients in R?

Q5) Answer the following questions (Any One)

[10]

- a) Revise the concept of Time series analysis. Explain how time series analysis is used for business forecasting?
- b) Write short Notes (Any one)
 - i) F Test in R
 - ii) Bayes Theorem
 - iii) Correlation analysis

