

16/05/19

(FOT)

Roll No:

B.E DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2019

INDUSTRIAL ENGINEERING

SIXTH AND SEVENTH SEMESTER- (REGULATION-2012)

IE8003 APPLIED MULTI VARIATE STATISTICAL ANALYSIS

(Use of Statistical Tables are permitted)

Time: 3 hr

Max. Mark: 100

Answer ALL Questions

Part-A (10 X 2 = 20 Mark)

1. Define direct and inverse relationship.
2. What is coefficient of multiple determination?
3. What are the objectives of multivariate methods?
4. List out the properties of wishart distributions?
5. How will you calculate proportion of total population variance?
6. Define communality.
7. State any two applications of discriminant analysis?
8. Define discriminant ratio.
9. Define Association coefficient.
10. State the sampling distribution for multivariate normal data when no of variables is one and no of groups is greater than or equal two.



Part-B (5 X 16 = 80 Marks)

11 Show the illustration for checking bi-variate normality and the construction of chi-square plot of the generalized distances? (16)

12 (a) Discuss in detail about the modeling techniques and making inferences about population parameters with sampling data? (16)

OR

12 (b) ) In finance, it is of interest to look at the relationship between Y, a stock's average return, and X, the overall market return. The slope coefficient computed by linear regression is called the stock's beta by investment analysts. A beta greater than 1 indicates that the stock is relatively sensitive to changes in the market; a beta less than 1 indicates that the stock is relatively insensitive. For the following data, compute the beta and test to see whether it is significantly less than 1. Use alpha equal to 0.05. (16)

Y (%)	10	12	8	15	9	11	8	10	13	11
X (%)	11	15	3	18	10	12	6	7	18	13

13 (a) Discuss the factor analysis using centroid method with a suitable example? (16)

OR

13 (b) Elaborate the objectives, estimation and step-by-step of PCA in detail? (16)

14 (a) Explain the steps to design the discriminant function? (16)

OR

14 (b) How will you design the Discriminant function? Explain the Computation of Discriminant ratio,  $K$  and identify the variable which is more important in relation to the other variable? How will you validate the Discriminant function using the set of data by forming groups based on the critical Discriminant score? How will you frame the hypothesis? (16)

15 (a) Derive an MANOVA model for comparing  $g$  population mean vectors? (16)

OR

15 (b) Explain the procedure involved in the computation of Multi-Variate Two Way Fixed Effects Model with Interaction? (16)

