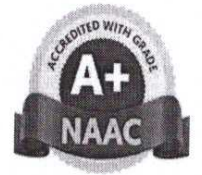


SHRI GNANAMBICA DEGREE COLLEGE: MADANAPALLE



(AUTONOMOUS)
STATISTICS-MINOR
COURSE-2: STATISTICAL METHODS
SEMESTER III
(W.E.F.2024 - 25)
Program: All Groups



Hours per week: 4

Credits: 3

Learning Outcomes: After successful completion of the course students will be able to:

1. To get the knowledge of estimating future values by using curve fitting.
2. To calculate the relationship between bivariate data.
3. To find the relationship about the multivariate data.
4. To acquaint about the forecasting of the data by using regression techniques.
5. To find the association of the categorical data by using attributes

Unit – 1: Curve fitting:

Bivariate data - Principle of least squares - Fitting of nth degree polynomial - Fitting of straight line - Fitting of Second degree polynomial or Parabola - Fitting of family of exponential curves and Power curve

Unit – 2: Correlation:

Meaning - Types of Correlation - Measures of Correlation – Scatter diagram - Karl Pearson's Coefficient of Correlation - Properties - Rank Correlation – Coefficient of Rank Correlation (with and without ties) – Properties - Bivariate frequency distribution - Correlation coefficient for bivariate data and problems.

Unit – 3: Multiple and Partial Correlation :

Coefficient of concurrent deviation - probable error and Standard Error - Coefficient of determination - Multiple and Partial correlation coefficients (three variables only) - Properties and Problems- Correlation ratio.

Unit – 4: Regression :

Concept of Regression - Linear and Non Linear regression - Linear Regression – Regression lines - Regression coefficients and its properties - Angle between two lines of regression - Regressions lines for bivariate data and simple problems. Correlation vs regression.

Unit – 5: Attributes:

Notations – Class - Order of class frequencies - Ultimate class frequencies - Consistency of data - Conditions for consistency of data for 2 and 3 attributes only - Independence of attributes - Association of attributes and its measures - Relationship between association and colligation of attributes - Contingency table - Square contingency, Mean square contingency, Coefficient of mean square contingency, Tschuprow's coefficient of contingency

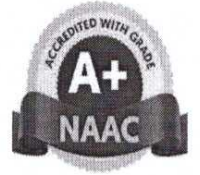


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SHRI GNANAMBICA DEGREE COLLEGE: MADANAPALLE



(AUTONOMOUS)
STATISTICS-MINOR
COURSE-2: STATISTICAL METHODS - PRACTICALS
SEMESTER III
(W.E.F.2024 - 25)
Program: All Groups



Hours per week: 2

Credits: 1

1. Fitting of straight line
2. Fitting of parabola
3. Fitting of exponential curve $y = ae^{bx}$
4. Fitting of exponential curve $y = a b^x$
5. Fitting of power curve $y = a x^b$
6. Correlation coefficient and regression lines by direct method.
7. Correlation coefficient, regression lines by deviation method
8. Bivariate table. 9. Multiple and Partial correlation coefficients.
10. Yule's coefficient of association and colligation.
11. Square, Mean square, Coefficient of contingencies and Tschuprow's coefficient

Note: Training shall be on establishing formulae in Excel cells and derive the results. The excel output shall be exported to MS word for writing inference.

References:

1. S. C. Gupta & V. K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. O. P. Gupta: Mathematical Statistics, Kedar nath Ram nath & Co.
3. P. N. Arora & S. Arora: Quantitative Aptitude Statistics – Vol II, S. Chand & Company Ltd.
4. K. Rohatgi & Ehsanes Saleh: An Introduction to Probability and Statistics, John Wiley & Sons.



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(AUTONOMOUS)
STATISTICS-MINOR
COURSE-2: STATISTICAL METHODS

SEMESTER III

(W.E.F.2024 - 25)

Program: All Groups

Question Paper Blue Print

Time : 3 Hrs

Max Marks: 70

Part-A

Answer any Four of the following

4x5=20Marks

1. Question
2. Question
3. Question
4. Question
5. Question
6. Question
7. Question
8. Question

Answer any Five of the following choosing one from each unit

5x10=50Marks

Unit-1

9. Question
or
10. Question

Unit-II

11. Question
or
12. Question

Unit-III

13. Question
or
14. Question

Unit-IV

15. Question
or
16. Question

Unit-V

17. Question
or
18. Question



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(AUTONOMOUS)
STATISTICS-MINOR
COURSE-2: STATISTICAL METHODS

SEMESTER III
(W.E.F.2024 - 25)
Program: All Groups
Model Question Paper

Time : 3 Hrs

Max Marks: 70

Part-A

Answer any **FOUR** of the following questions. Each question carries FIVE marks $4 \times 5 = 20$

1. Explain principles of least squares method.
2. Types of correlation.
3. Scatter diagram.
4. Difference between correlation and Regression.
5. Explain coefficient of determination.
6. Define regression lines and regression coefficients.
7. Association of Attributes.
8. Explain consistency of data.

Part-B

Answer any **ONE** of the following questions. Each question carries TEN marks $5 \times 10 = 50$

UNIT-1

9. How do you Fit a second degree polynomial for a given set of n pairs.
(Or)

10. Fit a curve of the type $y = ab^x$.

X	1	6	11	16	20	26
Y	13	16	17	23	24	31

UNIT-2

11. Define correlation. State and prove properties of correlation.
(Or)

12. Derive spearman's rank correlation coefficient.

UNIT-3

13. Explain I) concurrent deviation method ii) Coefficient of multiple and partial correlation.
(Or)

14. Explain I) Probable error II) Correlation ratio.

UNIT-4

15. Derive y on x and x on y regression lines.
(Or)

16. State and prove properties of regression.

UNIT-5

17. Show that for n attributes A 1, A 2, A 3..... An as $(A 1. A 2 \dots A n) \geq (A 1) + (A 2) + \dots + (A n) - (n-1) N$
(Or)

18. Obtain the relation between co-efficient of association and co- efficient of colligation and consistency of data.



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