Lesson Plan

Class: B.sc /BA -2nd sem

Subject:statistics

| Week | Topics |
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| 1 | **Correlation for Bivariate Data:** Concept and types of correlation, Scatter diagram; KarlPearson Coefficient of correlation (r) for non-frequency and frequency distributions, assumptions and properties for r, derivation of limits of r ; |
| 2 | Rank correlation coefficient with derivation of its formula, its merits and demerits. Derivation of limits of rank correlation coefficient, Tied or repeated ranks, coefficient of determination.   |
| 3 | **Linear Regression:** Concept of regression; principle of least squares and fitting ofstraight line, derivation of two lines of regression, properties of regression coefficients, standard error of estimate obtained from regression line, correlation coefficient between observed and estimated values, distinction between correlation and regression. Angle between two lines of regression.  |
| 4 | **Curvilinear Regression:** Fitting of second degree parabola, power curve of the typeY=axb, exponential curves of the types Y=abx and Y=ae bx.  |
| 5 | **Correlation and Regression for Trivariate data:** Concept of multiple and partialcorrelation and regression, derivation of plane of regression, properties of residuals, derivation of the formula for variance of the residuals, coefficient of multiple correlation |
| 6 | and its properties, coefficient of partial correlation and its properties, multiple correlation in terms of total and partial correlations.  |
| 7 | **Bernoulli distribution and its moments, Binominal distribution:** Moments, recurrencerelation for the moments, mean deviation about mean, mode, moment generating function (m.g.f.), additive property, characteristic function (c.f.), cumulants, recurrence relation for cumulants, probability generating function (p.g.f.) and recurrence relation for the probabilities of Binominal distribution. |
| 8 | **Poisson Distribution:** Moments, mode, recurrence relation for moments, m.g.f., c.f.cumulants and p.g.f. of Poisson distribution, additive property of independent Poisson variates. Negative Binominal distribution: m.g.f., cumulants and p.g.f. of negative binominal distribution, deduction of moments of negative binominal distribution from those of binominal distribution. Numerical problems based on Binominal and Poisson distributions.  |
| 9 | Discrete uniform distribution, Geometric distribution: Lack of memory, moments and m.g.f. of Geometric distribution. Mean and variance of the Hypergeometric distribution |
| 10 | . Continuous Uniform distribution. Moments, m.g.f., characteristic function and mean deviation of uniform distribution.   |
| 11 | Normal distribution as a limiting form of binominal distribution, chief characteristics of Normal distribution; mode, median, m.g.f., c.g.f. and moments of Normal Distribution, A linear combination of independent normal variates, points of inflexion, mean deviation about mean, area property of Normal distribution and related numerical problems, importance and fittings or normal distribution.  |
| 12 | **Gamma distribution:** m.g.f. properties of Gamma distribution, Beta distribution of firstand second kind, Exponential Distribution.  |