1.8 Mathematics (Calculus & Bio-statistics)

1. Differential Calculus- Continuity and limit, Differentiation derivability and derivative, R.H. derivatives and L.H. derivatives, differentials, general theorems of derivation, Derivatives of trigonometric functions (Excluding inverse trigonometric and hyperbolic functions) logarithmic differentiations, partial differentiation.
2. Integral Calculus- Integration as inverse process of differentiation, definite integrals, integration by substitution, integration by parts, integration of algebraic functions.
3. Differential equations- Formation of a differential equation, order and degree derivation of a different equation.
Differential equation of first order and first degrees, linear equation with constant coefficient. Homogeneous linear equation (first method of solution only). Simultaneous differential equations which are linear and of the first order. Laplace transformations, solution of ordinary and practical differential equations by transform methods.
4. Tables and Graphs 'Life tables' only.
5. Linear correlation coefficient, person's assumptions and casuality. Regression of Y on X and X on Y standard error estimate.
6. Correlation coefficient: Linear and curvilinear correlation.
7. Sampling: Non-Probability and Probability samples, Sampling distribution, confidence intervals, computing 99% and 95% fiducial limits from tables of areas and ordinates of normal curve.
8. Probability rules, binomial experiments, 'Z' score computing 't' tests and analysis of variance.

All calculations should be illustrated with examples from true laboratory pharmacological experimental models.

Books Recommended:

1. David S. Phillips, 'Basic Statistics for health science student's Freeman and Company, San Francisco.

2. Ray & Sharma, 'Mathematical Statistics'.

3. Bansal, Agrawal & Bhargava, 'Differential calculus-I, Jaipur Publishing House.

4. Bansal, Agrawal & Bhargava, 'Integral calculus, Jaipur Publishing House.

5. Bansal & Dhami, 'Differential equations-I', Jaipur Publishing House.

6. Gupta & Goyal, 'Laplace Transformation', Jaipur Publishing House.