PROBABILITY AND STATISTICS

(CHAPTER WISE IMPORTANT QUESTIONS)

UNIT 1 - MEASURES OF CENTRAL TENDENCY

1. Calculation of Arithmetic Mean, Mode, Median in Continuous Series.
2. Problems on Standard Deviation, variance and Mean deviation in Continuous series.
3. Problems on Central and Non-central moments.
4. Calculations of Skewness and Kurtosis.
5. Fitting a straight line to given data.
6. Fitting a Second degree parabola.
7. Fit a Exponential curve
8. Fit a Power curve equation
9. Define Correlation and types of correlation.
10. Problems on Karl Pearson Correlation coefficient.
11. Problems on Spearman Rank Correlation (for repeated, non-repeated)
12. Explain Lines of Regression and problems
13. Problems on finding two regression lines on given data.

UNIT 2 - PROBABILITY AND RANDOM VARIABLES

1. State and prove Addition Theorem, Multiplication Theorem (two events).
2. State and prove Bayes Theorem, and problems.
3. Define Random Variable, Discrete/Continuous, Distribution Function.
4. Problems on Discrete Random Variable (evaluate, requirements, problems).
5. Problems on Continuous Random Variable (evaluate, requirements, problems).
6. Problems on Mathematical Expectation (mean, variance, standard deviation using Expectation).
7. Problems on Discrete/Continuous Bivariate Random Variables.

UNIT 3 - DISTRIBUTIONS

1. Define Binomial Distribution.
2. Derive mean, variance, moment generating function & problems on Binomial Distribution.
3. Define Poisson Distribution.
4. Derive mean, variance, moment generating function & problems on Poisson Distribution.
5. Define Normal Distribution.
6. Derive mean, variance, moment generating function & problems on Normal Distribution.
7. Define Exponential Distribution.
8. Derive mean, variance, moment generating function & problems on Exponential Distribution.

UNIT 4 - LARGE SAMPLES

1. Define:
   (i) Point Estimation
   (ii) Interval Estimation
   (iii) Properties of Good Estimator

2. Define:
   (i) Null Hypothesis
   (ii) Alternative Hypothesis
   (iii) Level of Significance
   (iv) Critical Region (a) One Tailed Test (b) Two Tailed Test

3. Z Test for:
   (i) Single Mean
   (ii) Difference of Mean (procedure & problems)
   (iii) Single Proportion
   (iv) Difference of Proportions

UNIT 5 - SMALL SAMPLES

1. Define:
    (i) Degrees of Freedom
    (ii) Small, Large Sample

2. t-Test for:
    (i) Single Mean (problems + procedure)
    (ii) Difference of Means (problems + procedure)
    (iii) Paired t-Test (problems)

3. f-Test (procedure + problems)

4. Chi-Square Test for Independence of Attributes.

5. Define ANOVA and problems on One Way ANOVA Classification