SYLLABUS – 2024- 2025

CLASS – **XII**

SUBJECT – **STATISTICS**

Total Marks – 70 **Practical - 30**

HALF-YEARLY EXAMINATION: 2024-2025

THEORY EXAMINATION, FULL MARKS: 70, TIME: 3 HOURS

Mathematics :

Limit, Continuity, Differentiation, Integration (only Numerical), Standard definition of Gamma integral 4 results involving it (without derivation).

Correlation & Regression :

Bivariate Data, Scatter diagram, Correlation & Correlation coefficient, Properties of correlation coefficient, Rank correlation, spearmani & Rank Correlation coefficient (without tie).

Concept of Regression, Principle of least & squares, Fitting of Regression lines, Important results relating to regression lines.

Probability & Probability Distribution –I

Random experiment, Trial, Sample space, Sample point and different types of events, Definition of Probability : Classical, Statistical, and Axiomatic, Theorem on the probability of union of time or three events. Conditional Probability, Theorem on Conditional Probability for two or three events, Independent events, Bayes' theorem and its application. Random variable (diserate & continuous) and its probability distribution, cumulative distribution function. Probability mass function & Probability density function, Mathematical expectation. Addition and Multiplication rule of mathematical expectation. Problems related to probability distribution and Mathematical expectation.

BLUE-PRINT OF DISTRIBUTION OF MARKS
HALF-YEARLY EXAMINATION: 2024-2025

Topic	1 Mark	2 Marks	3 Marks	5 Marks
Mathematics	1x2	2x1	3x1	5x1
Correlation & Regression	1x5	2x1	3x4	5x3
Probability & Probability Distribution	1x3	2x4	3x1	5x2
	1x10=10	**2x6=12**	**3x6=18**	**5x6=30**
Total Marks				**70**

PRACTICAL EXAM SYLLABUS FOR HALF -YEARLY EXAM :

1. Correlation coefficient & linear regression
2. Spearman & Rank correlation coefficient (without tie)
3. Application & Fitting of Binomial distribution
4. Application & fitting of poisson distribution
5. Scatter diagram

CLASS- XII
SUB- STATISTICS

PRE-BOARD / BOARD FINAL EXAMINATION: 2024-2025
THEORY EXAMINATION, FULL MARKS: 70, TIME: 3 HOURS

Mathematics:

Limit, Continuity, Differentiation, Integration (Only Numerical), Standard definition of Gamma integral and results involving it (without derivations).

Correlation & Regression:

Bivariate data. Scatter diagram. Correlation & Correlation coefficient. Properties of Correlation coefficient. Rank Correlation, Spearman's Rank Correlation coefficient (without tie).

Concept of Regression. Principle of Least squares. Fitting of Regression lines. Important results relating to regression lines.

Probability & Probability Distributions-I

Random experiment, Trial, Sample space, Sample point and different types of events. Definition of Probability: Classical, Statistical and Axiomatic. Theorem on the probability of union of (two & three) events. Conditional probability. Theorem on conditional probability for two & three events. Independence of events. Bayes' theorem and its application.

Random variable (discrete and continuous) and its probability distribution. Cumulative distribution function. Probability mass function and Probability density function. Mathematical expectation. Addition and Multiplication rule of mathematical expectation. Problems related to probability distribution and mathematical expectation.

Probability Distribution-II

Uniform (Discrete and Continuous), Bernoulli, Binomial, Poisson, Geometric, Normal distribution and Exponential Distribution.

Sampling, Estimation & Testing of Hypotheses

Population & sample. Parameter & statistic. Census & Sample survey. Concepts of probability sampling and random number tables. Concepts of sampling distribution of statistic and its standard error. Chi-square distribution, t-distribution, F-distribution (Definition and properties only). Simple random sampling with replacement (SRSWR) and Simple random sampling without replacement (SRSWOR): Estimation of population mean and standard error of the estimates.

Concept of Point estimation. Requirement of good estimator: Unbiasedness, Consistency, Efficiency. Elementary concept of MVUE & BLUE.

Statistical tests of Hypothesis- Null & alternative hypothesis. Simple & composite hypothesis, Critical region, Type-I and Type-II errors, Level of Significance and size of critical region, Power of a test. Tests of significance related to a single Binomial proportion, two binomial proportions using large sample approximations. Exact tests of hypothesis under normal set-up for a single mean and equality of two means. Frequency Chi-square test & Goodness of fit.

BLUE-PRINT OF DISTRIBUTION OF MARKS
PRE-BOARD/ BOARD FINAL EXAMINATION: 2024-2025

Topic	1 Mark	2 Marks	3 Marks	5 Marks
Mathematics	-	-	-	5x1
Correlation & Regression	1x2	-	3x1	5x1
Probability & Probability Distributions-I	1x5	2x2	3x2	5x1
Probability Distributions-II	-	2x2	3x2	5x1
Sampling, Estimation , Testing of Hypothesis	1x3	2x2	3x1	5x2
	1x10=10	**2x6=12**	**3x6=18**	**5x6=30**
Total Marks				**70**

PRACTICAL EXAMINATION SYLLABUS OF
PRE-BOARD/BOARD FINAL EXAMINATION: 2024-2025

1. Scatter diagram.
2. Correlation coefficient and Linear Regression.
3. Spearman's Rank Correlation coefficient (without tie).
4. Applications and Fitting of Binomial Distributions.
5. Applications and Fitting of Poisson Distributions.
6. Applications and Fitting of Normal Distributions.
7. Drawing of random samples by using random number tables.
8. Calculation of sample mean and standard error of sample mean in case of SRSWR and SRSWOR
9. Large sample tests of a single mean, single proportion and difference of two proportions.
10. Pearson's Chi-square tests.
11. Exact tests of hypotheses under normal set-up for a single mean, difference of two means and single variance.

PRACTICAL EXAMINATION
BLUE-PRINT OF DISTRIBUTION OF MARKS
(HALF YEARLY/PRE-BOARD/BOARD FINAL EXAMINATION:2024-2025
Full Marks: 30, Time: 3 Hours

1. Experiments (5 + 5 + 5+5)	20 Marks
2. Practical Note Book (PNB)	03 Marks
3. Viva-Voce	02 Marks
4. Attendance	05 Marks
Total Marks :-	**30 Marks**