The overall program is divided into eight papers, with four papers in each Semester.

**SEMESTER I**

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**SEMESTER I**

**Paper - I  Descriptive Statistics I (M. Marks: 100)**

1. The thrust of the paper is on basic concepts and applications of statistics and not on mathematical derivations.

2. The paper is divided into two sections, namely A and B.

3. The question paper will have 9 questions carrying equal marks. The candidate will be required to attempt five questions including the first compulsory question and two questions from each section, in three hours duration. The compulsory question shall consist of short answer type questions covering the whole syllabus with no internal choice.

4. The students are allowed to use electronic calculators with four basic Mathematical operations and up to one memory.

5. The distribution of 100 marks is as follows:

**Final Examination: 80 marks**

**Internal Assessment: 20 marks**

**Section –A**

Section-B

Measures of variation: range, quartile deviation, mean deviation and standard deviation. Coefficients of Dispersion and co-efficient of Variation, Box and Whisker Plot. Central and Non-Central Moments. Measures of skewness: Karl Pearson’s, Bowley’s and Coefficient of skewness based on moments. Measure of kurtosis based on moments.

References:


Paper - II Probability and Sampling Distributions (M.Marks: 100)

1. The thrust of the paper is on basic concepts and applications of statistics and not on mathematical derivations.
2. The paper is divided into two sections, namely A and B.
3. The question paper will have 9 questions carrying equal marks. The candidate will be required to attempt five questions including the first compulsory question and two questions from each section, in three hours duration. The compulsory question shall consist of short answer type questions covering the whole syllabus with no internal choice.
4. The students are allowed to use electronic calculators with four basic Mathematical operations and up to one memory.
5. The distribution of 100 marks is as follows:

   Final Examination: 80 marks
   Internal Assessment: 20 marks

Section – A

Probability: Random experiments, sample space, events. Mutually exclusive events, exhaustive events, complementary events, equally likely events, independent and dependent events, exhaustive events. Classical, statistical (empirical) and axiomatic approaches to probability. Additive and multiplicative laws of probability, conditional probability, partition of sample space, theorem of total probability and Bayes’ theorem. Discrete and continuous random variables and their probability functions. Mathematical expectation.

Section – B

Theoretical distributions: Bernoulli, binomial, Poisson and normal and their properties and applications. Sampling distributions associated with normal distribution (Chi-square, t and F). Law of large numbers and central limit theorem (definitions and applications only).

References:

2. L. Miller, I. and M. Miller, Mathematical Statistics (Sixth Ed.).
1. The thrust of the paper is on basic concepts and applications of statistics and not on mathematical derivations.
2. The paper is divided into two sections, namely A and B.
3. The question paper will have 9 questions carrying equal marks. The candidate will be required to attempt five questions including the first compulsory question and two questions from each section in three hours duration. The compulsory question shall consist of short answer type questions covering the whole syllabus with no internal choice.
4. The students are allowed to use electronic calculators with four basic mathematical operations and up to one memory.
5. The distribution of 100 marks is as follows:

   **Final Examination: 80 marks**
   **Internal Assessment: 20 marks**

**Section - A**

Index Numbers: Purpose of the index numbers, problems in the construction of index numbers. Construction of index numbers: un-weighted and weighted aggregate methods and method of weighted averages of price relatives. Chain index numbers. Conversion of fixed base to chain base index numbers and vice versa. Tests for Index numbers. Cost of living index numbers. Splicing and deflating of index number series

**Section – B**


**References :**

Paper - IV   Research Methods (M. Marks: 100)

1. The thrust of the paper is on basic concepts and applications of statistics and not on mathematical derivations.

2. The paper is divided into two sections, namely A and B

3. The question paper will have 9 questions carrying equal marks. The candidate will be required to attempt five questions including the first compulsory question and at least one from section A and at least two from section B, in three hours duration. The compulsory question shall consist of short answer type questions covering the whole syllabus with no internal choice.

4. The students are allowed to use electronic calculators with four basic Mathematical operations and up to one memory.

5. The distribution of 100 marks is as follows:

   Final Examination: 80 marks
   Internal Assessment: 20 marks

Section – A

Introduction to Research : meaning of research, types of research, role of research, characteristics of interest in research. Process of research, report writing and presentation.Use of statistical packages (Excel, Minitab, SPSS) in research.

Section B


References:

SEMESTER II

Paper - V  Descriptive Statistics II  (M.Marks: 100)

1. The thrust of the paper is on basic concepts and applications of statistics and not on mathematical derivations.

2. The paper is divided into two sections, namely A and B.

3. The question paper will have 9 questions carrying equal marks. The candidate will be required to attempt five questions including the first compulsory question and two questions from each section, in three hours duration. The compulsory question shall consist of short answer type questions covering the whole syllabus with no internal choice.

4. The students are allowed to use electronic calculators with four basic Mathematical operations and up to one memory.

5. The distribution of 100 marks is as follows:

   Final Examination: 80 marks
   Internal Assessment: 20 marks

Section – A

Correlation Analysis: Methods of studying simple correlation: scatter diagram, Karl Pearson's coefficient of correlation, Spearman's rank correlation, Kendall’s Tau. Multiple and partial correlation, Correlation ratio and intra-class correlation.


Section – B


References :


Paper –VI  Testing of Hypotheses (M.Marks: 100)

1. The thrust of the paper is on basic concepts and applications of statistics and not on mathematical derivations.

2. The paper is divided into two sections, namely A and B

3. The question paper will have 9 questions carrying equal marks. The candidate will be required to attempt five questions including the first compulsory question and two questions from each section in three hours duration. The compulsory question shall consist of short answer type questions covering the whole syllabus with no internal choice.

4. The students are allowed to use electronic calculators with four basic Mathematical operations and up to one memory.

5. The distribution of 100 marks is as follows:

   Final Examination: 80 marks
   Internal Assessment: 20 marks

Section – A

Tests of Significance: Statistical hypotheses. Type-I and Type-II errors, level of significance, tests of significance for the parameters of the normal distribution (one sample and two samples). Approximate tests concerning proportion, difference of two proportions. Chi-square tests for goodness of fit and independence of attributes. Test for the significance of observed correlation coefficient.

Section – B


References :


2. L. Miller, I. and M. Miller, Mathematical Statistics ( Sixth Ed.).
Paper VII. - Times Series Analysis and Design of Experiments (M.Marks: 100)

1. The thrust of the paper is on basic concepts and application of statistics and not on mathematical derivations.

2. The paper is divided into two sections, namely A and B

3. The question paper will have 9 questions carrying equal marks. The candidate will be required to attempt five questions including the first compulsory question and two questions from each section, in three hours duration. The compulsory question shall consist of short answer type questions covering the whole syllabus with no internal choice.

4. The students are allowed to use electronic calculators with four basic Mathematical operations and up to one memory.

5. The distribution of 100 marks is as follows:

   **Final Examination:** 80 marks  
   **Internal Assessment:** 20 marks

**Section –A**


**Section –B**

Design of Experiments. Analysis of variance: one way and two-way classifications. Principles of design of experiments. Completely randomized design, randomized complete block design and Latin square design: their layouts, analysis of variance tables and applications.

**References:**

Paper - VIII  Research Project (Dissertation)  (M. Marks: 100)

1. The thrust of the Dissertation-based paper is to give an opportunity to the students to have a first hand experience of data collection, compilation, analysis and report writing.

2. A list of suggested topics etc. for the Projects shall be provided to the students at the time of enrolment. However, they will be encouraged to undertake Project related to their professional placement.

3. They will execute the Project under the guidance of a member of the Faculty in University/College who is Ph.D. and has at least three research papers to his credit.

4. The project has to be submitted as per the date finalised by the USOL in consonance with the University Admission and Examination schedule.

The distribution of 100 marks is as follows:

**Project Report: 50 marks**  
Viva:50 marks