FACULTY OF SCIENCE

SYLLABI

FOR

POSTGRADUATE DIPLOMA IN STATISTICS

EXAMINATIONS 2012

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Syllabus for P.G. Diploma in Statistics
2011 -2012

Paper I  Descriptive Statistics     M. Marks :100
Time: 3 Hrs.

Objective: The main objective of the paper is to equip the learners with the basic statistical tools usually used to (i) compress bulk mass of data into manageable space, and (ii) represent the data by suitable representative values.

Note:
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 three sections, namely A, B and C
3. The question paper will have 9 questions, with 3 questions from each section. A candidate will be required to attempt 5 questions in all, selecting at most two from each section.
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 :  90 marks
   Internal Assessment : 10 marks

   Section – A


Section – B

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


Section - C


References:
Objective: The main objective of the paper is to introduce the concepts, laws and applications of probability to the learners. The paper precisely enriches the learners with some fundamental concepts pertaining to three most important theoretical distributions and hypotheses testing mechanisms.

Note:
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 three sections, namely A, B and C.
3. The question paper will have 9 questions, with 3 questions from each section. A candidate will be required to attempt 5 questions in all, selecting at most two from each section.
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: 90 marks
   - Internal Assessment: 10 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. Theoretical distributions: 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).

Section – B

Tests of Significance: Statistical hypotheses. Type-I and Type-II errors, level of significance, test 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 – C


References:
2. I. Miller, and M. Miller, Mathematical Statistics (Sixth Ed.).
Objective: The main objective of the paper is to familiarize the learners with the basic statistical tools which provide foundations to the data pertaining to the business world. The paper precisely enriches the learners with some fundamentals relating to the Index numbers, Quality Control and Time series analysis.

Note:
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 three sections, namely A, B and C
3. The question paper will have 9 questions, with 3 questions from each section. A candidate will be required to attempt 5 questions in all, selecting at most two from each section.
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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. Cost of living index numbers. Splicing and deflating of index number series.

Section - B

Section – C
Computational Methods: Interpolation and extrapolation, their significance. Lagrange and Newton methods.

References:
Objective: The main objective of the paper is to sensitize the learners with the pre-requisites of a research, and fundamentals of data collection with Sampling Techniques and Design of Experiments, as also with the various features of some noted statistical packages.

Note:
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 three sections, namely A, B and C
3. The question paper will have 9 questions, with 3 questions from each section. A candidate will be required to attempt 5 questions in all, selecting at most two from each section.
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5. The distribution of 100 marks is as follows:
   - Final Examination: 90 marks
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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


Basic principles of sample survey. Sampling and non-sampling errors, sample survey versus complete enumeration. Different stages in a sample survey. Sampling Techniques: simple random sampling (with and without replacement), stratified random sampling, systematic sampling, multistage sampling, multiphase sampling. Purposive sampling and quota sampling.

Section – C

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:

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