

[KV 822]

SEPTEMBER 2009

Sub. Code: 3822

**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)**

**DEGREE EXAMINATION**

**(Regulations 2008-2009 )**

**(Candidates admitted from 2008-2009 onwards)**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three Hours**

**Maximum: 70 marks**

**Answer ALL questions**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Give a detailed account of sample size determination.
2. Explain the uses of computers in drug information retrieval and storage.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Describe the case study method.
2. Explain a frequency distribution.
3. Illustrate the prerequisites of a graph.
4. Explain with example null hypothesis.
5. Discuss the attribute risks.
6. Elucidate the computer use in hospital pharmacy.

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[KX 822]

SEPTEMBER 2010

Sub. Code: 3822

**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)**

**DEGREE EXAMINATION**

**(Regulations 2008-2009 )**

**(Candidates admitted from 2008-2009 onwards)**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three Hours**

**Maximum: 70 marks**

**Answer ALL questions**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Define Epidemiology.

Explain in detail various study designs used in epidemiology.

2. Define Sampling.

Discuss the various sampling methods with appropriate Pharmacy examples.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Non Parametric Tests.

2. Use of statistical software in drug research.

3. Correlation and Regression.

4. Sensitivity and Specificity.

5. Type I and Type II errors.

6. Essentials of a Protocol.

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**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)****DEGREE EXAMINATION****FOURTH YEAR****PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY***Q.P. Code: 383822***Time: Three Hours****Maximum: 100 marks****Answer ALL questions in the same order.****I. Elaborate on :****Pages Time Marks  
(Max.) (Max.) (Max.)**

- |  |    |         |    |
|--|----|---------|----|
| 1. Various steps involved in testing the significance of single mean and difference between two means (independent samples) in small samples using 't' distribution. | 17 | 40 min. | 20 |
| 2. Computer medication order entry.  | 17 | 40 min. | 20 |

**II. Write notes on :**

- |  |   |         |   |
|--|---|---------|---|
| 1. Report writing.                       | 4 | 10 min. | 6 |
| 2. Linear correlation and regression.    | 4 | 10 min. | 6 |
| 3. Type I Error and Type II Errors.      | 4 | 10 min. | 6 |
| 4. Epidemiology.                         | 4 | 10 min. | 6 |
| 5. Parametric and non-parametric tests . | 4 | 10 min. | 6 |
| 6. Graphical presentation.               | 4 | 10 min. | 6 |
| 7. One tailed and two tailed tests.      | 4 | 10 min. | 6 |
| 8. Case studies.                         | 4 | 10 min. | 6 |
| 9. Mann Whitney U test.                  | 4 | 10 min. | 6 |
| 10. Central tendency.                    | 4 | 10 min. | 6 |

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**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)****DEGREE EXAMINATION****FOURTH YEAR****PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY***Q.P. Code: 383822***Time: Three Hours****Maximum: 100 marks****Answer ALL questions in the same order.****I. Elaborate on :**

Pages (Max.)	Time (Max.)	Marks (Max.)
-----------------	----------------	-----------------

- |  |    |         |    |
|--|----|---------|----|
| 1. Explain statistical methods in epidemiology.    | 17 | 40 min. | 20 |
| 2. Explain Drug information retrieval and storage. | 17 | 40 min. | 20 |

**II. Write notes on :**

- |   |   |         |   |
|---|---|---------|---|
| 1. Write short notes on case studies and observational studies.               | 4 | 10 min. | 6 |
| 2. Explain Power of a study.  | 4 | 10 min. | 6 |
| 3. Write short notes on standard deviation and variance.                      | 4 | 10 min. | 6 |
| 4. Explain student t test.  | 4 | 10 min. | 6 |
| 5. Explain one way classification of analysis of variance.                    | 4 | 10 min. | 6 |
| 6. Explain wilcoxon's signed rank test and Sign test.                         | 4 | 10 min. | 6 |
| 7. Explain statistical software of SPSS , Epi info.                           | 4 | 10 min. | 6 |
| 8. Write the use of computers in hospital pharmacy                            | 4 | 10 min. | 6 |
| 9. Write out the Drug labels and list in pharmacy.                            | 4 | 10 min. | 6 |
| 10. Write the use of computers for pharmaceutical care in community pharmacy. | 4 | 10 min. | 6 |

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**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)****DEGREE EXAMINATION****FOURTH YEAR****PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY***Q.P. Code: 383822***Time: Three Hours****Maximum: 100 marks****Answer ALL questions in the same order.****I. Elaborate on :**

Pages (Max.)	Time (Max.)	Marks (Max.)
-----------------	----------------	-----------------

- |  |    |         |    |
|--|----|---------|----|
| 1. Explain Types of clinical study design. | 17 | 40 min. | 20 |
| 2. Explain Analysis of variance.           | 17 | 40 min. | 20 |

**II. Write notes on :**

- |   |   |         |   |
|---|---|---------|---|
| 1. Write short notes on designing the methodology.            | 4 | 10 min. | 6 |
| 2. Define mean and median.                                    | 4 | 10 min. | 6 |
| 3. Define Histogram, Pie charts, and Scatter plots.           | 4 | 10 min. | 6 |
| 4. Explain Report writing and Presentation of data.           | 4 | 10 min. | 6 |
| 5. Explain Wilcoxon signed rank test and Mann Whitney U test. | 4 | 10 min. | 6 |
| 6. Define Regression. Explain types of regression.            | 4 | 10 min. | 6 |
| 7. Explain method of correlation.                             | 4 | 10 min. | 6 |
| 8. What are the uses of computerized retrieval?               | 4 | 10 min. | 6 |
| 9. Explain Patient medication profiles and Inventory control. | 4 | 10 min. | 6 |
| 10. Computerizing the prescription dispensing process.        | 4 | 10 min. | 6 |

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[LC 822]

APRIL 2013

Sub. Code: 3822

**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)**

**DEGREE EXAMINATION**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three Hours**

**Maximum: 100 marks**

**Answer All questions**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain Regression and Correlation.
2. Explain Null hypothesis, level of significance, power of test, P value.

**II. Write notes on:**

**(10 x 6 = 60)**

1. Write notes on Incidence and prevalence.
2. Write notes of interventional studies.
3. Define Range and variation of mean.
4. Define scatterplots and semilogarithmic plots.
5. Define analysis of variance and explain two way classification.
6. Explain chi square test and write the application of student t test.
7. Write the advantages of computerized literature retrieval.
8. Write out the patient record database management.
9. Write short notes on report writing.
10. Define median and mode.

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[LD 822]

OCTOBER 2013

Sub. Code: 3822

**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)**

**DEGREE EXAMINATION**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three Hours**

**Maximum: 70 marks**

**Answer All questions**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the steps involved in testing single mean in the case of large samples.
2. Report writing and presentation of data.

**II. Write notes on:**

**(10 x 3 = 30)**

1. Clinical study designs.
2. Level of significance.
3. Paired t - test.
4. One-Way Analysis of variance.
5. Measures of central tendency – mean and median.
6. Non-parametric test.
7. Regression Analysis.
8. Advantages of Computerized Medication Order Entry.
9. Uses of Computers in Pharmaceutical care.
10. Epidemiology.

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[LE 822]

APRIL 2014

Sub. Code: 3822

**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)**

**DEGREE EXAMINATION**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three Hours**

**Maximum: 70 marks**

**Answer All questions**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the steps involved in hypothesis testing with an example.
2. The uses of computers in Community Pharmacy.

**II. Write notes on:**

**(10 x 3 = 30)**

1. Report writing.
2. Ogive curve.
3. Case study.
4. Power of the test.
5. Uses of standard deviation.
6. Non-parametric test.
7. Relative and attributable risk.
8. Interpretation of correlation co-efficient.
9. Hypothesis – Null and Alternate hypothesis.
10. Uses of Chi-Square ( $\chi^2$ ) test.

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[LF 822]

OCTOBER 2014

Sub. Code: 3822

**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)**

**DEGREE EXAMINATION**

**(2009-2010 Regulation)**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three Hours**

**Maximum: 70 marks**

**Answer All questions**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. Discuss briefly on the needs and classification of Research study.
2. Discuss about research report and about sections used in research report.
3. Discuss about presentation of data.
4. Briefly discuss about inventory control.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Write short notes on research methodology.
2. Write about various ways of collecting samples.
3. Write about Type I error and Type II error.
4. Write about regression and correlation.
5. Write about Epi info.
6. Elucidate the use of computer and the database in hospital pharmacy.

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[LG 822]

APRIL 2015

Sub. Code: 3822

**DOCTOR OF PHARMACY (PHARM. D / POST BACCALAUREATE)**

**DEGREE EXAMINATION**

**(2009-2010 Regulation)**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three Hours**

**Maximum: 70 marks**

**Answer All questions**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. How reports are prepared in clinical trial?  
Explain the contents of the report.
2. How non-parametric data are analysed?  
Explain any one statistical method to analyze non-parametric data.
3. Design an experimental protocol to conduct interventional clinical study.
4. Explain the steps involved in storage and retrieval of information from the computers.

**II. Write notes on:**

**(6 x 5 = 30)**

1. How data distribution in clinical study is analyzed?
2. How data are represented by Pie chart and histogram?
3. What is Chi square test? How it has been done?
4. Briefly write on linear regression methods and its significance.
5. How Mean, Mode, Median are calculated?
6. Write short notes on relative and attributed risk.

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[LH 822]

OCTOBER 2015

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION**

**(2009-2010 Regulation)**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code : 383822*

**Time: Three Hours**

**Maximum: 70 marks**

**Answer ALL questions**

**I. Elaborate on :**

**(4 x 10 = 40)**

1. Explain the use of computers in a community pharmacy.
2. What is standard deviation and standard error mean? State its significance.  
How they are calculated?
3. What is hypothesis? How is can be tested? Explain with suitable example.
4. How data are represented? Explain.

**II. Write notes on :**

**(6 x 5 = 30)**

1. How power of the study is calculated?
2. Explain case control studies.
3. Briefly write on the commercially available statistical software.
4. What is Student 't' test? How it has been calculated?
5. Write short notes on Confidence interval.
6. How patient medication profile is recorded in the Pharmacy? Stat its importance.

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[LI 822]

APRIL 2016

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION  
(2009-2010 Regulation)  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three hours**

**Maximum : 70 marks**

**I. Elaborate on :**

**(4 x 10 = 40)**

1. Explain in detail of various study designs used in Epidemiology.
2. Explain Parametric and Non-parametric tests.
3. Explain various types of Data distribution.
4. Explain the uses of computer in Hospital Pharmacy.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Write short notes on Report writing.
2. Write the uses of statistical software in Drug research.
3. Explain Central Tendency.
4. Write short notes on Linear correlation and Regression.
5. Explain statistical software of SPSS and Epi info.
6. Explain the various types of Graphs.

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[LJ 822]

OCTOBER 2016

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION  
(2009-2010 Regulation)  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time : Three hours**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. What is Clinical Research? Design a protocol to conduct an efficacy studies for the new chemical entities in Phase II Clinical Trial.
2. How data can be represented Graphically? Explain different Graphical representation with suitable example.
3. Explain the inventory control methods in a Pharmacy and software available.
4. Explain the Data Collection Procedure. How data are statistically analysed by Mann Whitney U test?

**II. Write notes on:**

**(6 x 5 = 30)**

1. What is Chi square test? How it is performed?
2. Explain power calculation to determine the sample size.
3. Write a note on regression method.
4. State the applications of SAS.
5. Write the procedure, merits and demerits of online prescription methods.
6. What are semi logarithmic plots? Give its application.

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[LK 822]

MAY 2017

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION  
(2009-2010 Regulation)  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three hours**

**Maximum : 70 marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. What is mean by Homogenous Data? Name the statistical methods used to analyse Homogenous Data. Explain the ANOVA method of statistical analysis.
2. Explain the report preparation with contents of the report in a Clinical Trial.
3. What are the attributable risk in Epidemiological Research? Add a note on NULL hypothesis.
4. Briefly write on:
  - a) Confidential limit calculation in statistics.
  - b) Drug information center.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Explain student 't' tests.
2. Write on median, standard error mean and average.
3. Write a note on scattered plots.
4. How admixtures are prepared? Explain the role of pharmacist in intravenous admixtures preparation.
5. Write the application of computers in patient data management.
6. What are Pearson's and Spearman's correlations? Give its application.

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[LL 822]

OCTOBER 2017

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION  
(2009-2010 Regulation)  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time: Three hours**

**Maximum : 70 marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. What is sampling? Discuss the various sampling methods are used in pharmacy.
2. Explain Drug information retrieval and storage.
3. What is the level of significance? Explain one way ANOVA Test.
4. Explain statistical software of SPSS, Epi info and SAS.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Explain the various measures of central tendency with suitable examples.
2. Write short notes on scatter plots and semi logarithmic plots.
3. Define Mean, Median and Mode.
4. Briefly write on the correlation.
5. Write out the computer system in Hospital pharmacy.
6. Write the uses of computer for pharmaceutical care in community pharmacy.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LM 822]

MAY 2018

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION  
(2009-2010 Regulation)  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time : Three hours**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. State on computer medication order entry.
2. Explain in detail about various study designs used in epidemiology.
3. How will you test the Null and Alternate hypothesis? Explain with suitable example.
4. Detail on Type I and Type II errors.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Discuss about the presentation of data.
2. Write out the patient record database management.
3. Briefly write on drug information center.
4. Give details on power of a study.
5. Explain on Wilcoxon signed rank and Mann Whitney 'U' test.
6. Short note on relative and attributed risk.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LN 822]

OCTOBER 2018

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION  
(2009-2010 Regulation)  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time : Three hours**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. Discuss regarding the various sampling methods with appropriate examples.
2. Enumerate shortly on the applications of various software used in clinical study.
3. Detail about the title of contents in study report preparation of clinical trial.
4. What is level of significance? Explain about one way analysis of variance test.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Elucidate the use of computer and the database in hospital pharmacy.
2. Write short notes on designing the methodology.
3. Explain the responsibility of pharmacist in intravenous admixtures preparation.
4. State the importance of patient medication profile in pharmacy.
5. Concise note on central tendency.
6. Explain in detail on chi square test and student's T test.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LO 822]

MAY 2019

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION  
(2009-2010 Regulation)  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time : Three hours**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. Write the applications of computer in drug information retrieval and storage.
2. Provide a detailed account on sample size determination.
3. Elucidate various types of distribution of data in clinical study.
4. How will you design a protocol to conduct an experimental clinical study?

**II. Write notes on:**

**(6 x 5 = 30)**

1. Explain the utilization of computers for pharmaceutical care in community pharmacy.
2. Write down the drug labels and list in pharmacy.
3. Write notes on incidence and prevalence.
4. Explain case control studies.
5. What are correlation and regression? Give its application.
6. Short note on relative and attributed risk.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LP 822]

OCTOBER 2019

Sub. Code: 3822

**PHARM. 'D' AND PHARM. 'D' (POST BACCALAUREATE)  
DEGREE EXAMINATION  
(2009-2010 Regulation)  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time : Three hours**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. Describe in detail on the types of observational studies design.
2. Design the protocol to conduct the experimental clinical study.
3. Detail note on Type I and Type II errors.
4. Enlighten the use of computers for pharmaceutical care in community pharmacy.

**II. Write notes on:**

**(6 x 5 = 30)**

1. How patient medication profile is recorded in the pharmacy? State its importance.
2. Write short notes on standard deviation and variance.
3. Give details on sample size calculation.
4. Concise about the linear regression and correlation.
5. Write note on the patient record database management.
6. Write note on computerizing the prescription dispensing process.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[PHARMD 0321]**

**MARCH 2021**

**Sub. Code: 3822**

**(OCTOBER 2020 EXAM SESSION)**

**PHARM 'D' AND PHARM. 'D' (POST BACCALAUREATE) DEGREE EXAMINATION**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

***Q.P. Code : 383822***

**Time : Three hours**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. Discuss briefly on the various steps involved in a research process.
2. Explain application and procedure of student t test with an example.
3. Describe statistical methods in Epidemiology.
4. Enumerate the uses of computer in Hospital Pharmacy.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Explain types of clinical study design with a practical example.
2. Summarize research report writing and presentation of data.
3. Write short notes on mean, median and mode with an example.
4. Explain the basic procedure of testing of hypothesis.
5. Describe different types of statistical software.
6. Discuss about drug information retrieval and storage.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[PHARMD 0522]**

**MAY 2022**

**Sub. Code: 3822**

**(APRIL 2022 EXAM SESSION)**

**PHARM 'D' AND PHARM. 'D' (POST BACCALAUREATE) DEGREE EXAMINATION**

**FOURTH YEAR**

**PAPER IV – BIOSTATISTICS AND RESEARCH METHODOLOGY**

*Q.P. Code : 383822*

**Time : Three hours**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. Discuss about types of Clinical study design.
2. Explain application and procedure of Chi square test with an example.
3. Describe different types of statistical software.
4. Enumerate the uses of computer in Community Pharmacy.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Explain types of sampling methods with a practical example.
2. Summarize determination of sample size and power of study.
3. Write short notes on standard deviation, Variance and Coefficient Variation with an example.
4. Distinguish between parametric and non parametric methods.
5. Describe incidence and prevalence.
6. Discuss about computerizing the prescription policy.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[PHARMD 1122]**

**NOVEMBER 2022  
(OCTOBER 2022 EXAM SESSION)**

**Sub. Code: 3822**

**PHARM 'D' AND PHARM. 'D' (POST BACCALAUREATE) DEGREE  
EXAMINATION  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS & RESEARCH METHODOLOGY  
*Q.P. Code : 383822***

**Time : Three hours**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. Explain Correlation and Regression.
2. Discuss the protocol in Designing the Research Methodology.
3. a) Explain Null hypothesis and Alternative hypothesis.  
b) Write the steps involved in calculation of ANOVA.
4. Discuss the role of computers in
  - a) Patient record database management.
  - b) Medication order entry.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Describe Histogram and pie chart.
2. Write the steps involved in calculation of chi-square test.
3. Write the factors influencing sample size determination.
4. Explain the difference between Incidence and Prevalence.
5. Write a note on cross-sectional studies.
6. Measures describing central tendency distributions.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[PHARMD 0423]**

**APRIL 2023**

**Sub. Code: 3822**

**PHARM 'D' AND PHARM. 'D' (POST BACCALAUREATE) DEGREE  
EXAMINATION  
FOURTH YEAR  
PAPER IV – BIOSTATISTICS & RESEARCH METHODOLOGY**

*Q.P. Code: 383822*

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 70 Marks**

**I. Elaborate on:**

**(4 x 10 = 40)**

1. Explain the role of computers in drug information retrieval and storage.
2. Explain the statistical softwares SAS, Epi Info and SPSS.
3. Explain various Measures of Central Tendency.
4. Explain the steps involved in writing a Research Report.

**II. Write notes on:**

**(6 x 5 = 30)**

1. Write about drug information center.
2. Write a note on Regression.
3. Write about Null hypothesis and Alternative hypothesis.
4. Write a note on students' t' test.
5. Explain the role of computers in Hospital pharmacy.
6. Write a note on Scatter plots.

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