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

[AHS 0321] **MARCH 2021** **Sub. Code: 2474**

(AUGUST 2020 EXAM SESSION)

BACHELOR IN PROSTHETICS AND ORTHOTICS

THIRD YEAR (Regulation 2017-2018)

PAPER IV – RESEARCH METHODOLOGY AND BIO STATISTICS

Q.P. Code : 802474

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Data collection form experiments and Surveys.
2. Testing of Hypothesis.
3. Measurements and scaling techniques: Measurement scales and sources of error in measurement.

II. Write notes on: **(8 x 5 = 40)**

1. Need for Sampling.
2. Types of analysis of data.
3. Criteria for selecting sampling procedure.
4. Definition of Statistics/Biostatistics.
5. Tabular presentation of data.
6. Construction of Frequency distribution.
7. Histogram.
8. Types of Research.

III. Short answers on: **(10 x 3 = 30)**

1. Meaning of research.
2. Statement of research.
3. Method of collecting primary data.
4. Quantitative variable with example.
5. Application of Biostatistics.
6. Ogives or Cumulative frequency curves.
7. Bar diagrams and Pie diagrams.
8. Necessity of defining the problem
9. Types of sampling.
10. Exclusive and inclusive method of classification of Data.

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

[AHS 0222] **FEBRUARY 2022** **Sub. Code: 2474**
(AUGUST 2021 EXAM SESSION)

BACHELOR IN PROSTHETICS AND ORTHOTICS
THIRD YEAR (Regulation 2017-2018)
PAPER IV – RESEARCH METHODOLOGY AND BIO STATISTICS
Q.P. Code : 802474

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Objectives of Research Problem and necessity of defining the problem
2. Types of Research
3. Different Presentation of Data.

II. Write notes on: **(8 x 5 = 40)**

1. Research Methodology
2. Randomized Controlled Trial (RCT) Study Design
3. Sources of Errors in Measurement
4. ANOVA
5. Student's T-Test
6. Interval Scale and Ratio Scale
7. Stratified and Cluster Sampling
8. Bibliography

III. Short answers on: **(10 x 3 = 30)**

1. Types of analysis
2. Surveys
3. Define data.
4. Continuous Variable
5. Inclusion & Exclusion Criteria
6. Measurements & Scaling
7. Secondary Data
8. Non-Probability Sampling
9. Statistical Analysis
10. Software used for Data collection & Analysis

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

[AHS 0423] **APRIL 2023** **Sub. Code: 2474**

BACHELOR IN PROSTHETICS AND ORTHOTICS
THIRD YEAR - (Regulation 2017-2018 onwards)
PAPER IV – RESEARCH METHODOLOGY AND BIO STATISTICS
Q.P. Code: 802474

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Diagrammatic presentation of Data such as:
   a) Bar diagram b) Pie diagram
   c) Line diagram d) Pictogram and Cartogram.
2. Measurement and Scaling Techniques: i) Measurement scales
   ii) Source of Measurement error.
3. Testing of Hypothesis with example.

II. Write notes on: **(8 x 5 = 40)**

1. Applications of Biostatistics.
2. Types of Research approaches.
3. Data collection from Experiments and Surveys.
4. Criteria for selecting sampling procedure.
5. Types of Analysis.
6. Ogive or Cumulative frequency curves.
7. Statement of Research Problem and purpose and objective.
8. Methods of collecting Primary data.

III. Short answers on: **(10 x 3 = 30)**

1. Need for sampling.
2. Descriptive statistics.
3. Meaning of Research Design.
4. Need for Research Design.
5. Definition of Biostatistics.
6. Qualitative Data with example.
7. Cumulative and Relative frequency distribution.
8. Inclusive method of classification of Data.
9. Meaning of Research.
10. Objective of Research.

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

[AHS 1123] **NOVEMBER 2023** **Sub. Code: 2474**

BACHELOR IN PROSTHETICS AND ORTHOTICS
THIRD YEAR (Regulation 2017-2018 onwards)
PAPER IV – RESEARCH METHODOLOGY AND BIO STATISTICS
Q.P. Code: 802474

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Distinguish between an Experimental and Survey Research. Explain fully the Survey Method of Research.
2. What points will you keep in mind while preparing a Research Report? Explain.
3. What are the applications of ANOVA One way and Two-way in Clinical Prosthetics?

II. Write notes on: **(8 x 5 = 40)**

1. Distinguish between Statistic and Parameter.
2. State the advantages and limitations of Diagrammatic representation of Data.
3. What are the benefits of conducting an Experimental Study?
4. Explain the construction of Histogram.
5. Explain Non Linear Regression.
6. Write a note on elements of ANOVA.
7. Explain the process of Random Sampling.
8. What is a t-test? When it is used and for what purpose(s)? Explain by means of examples.

III. Short answers on: **(10 x 3 = 30)**

1. Stratified Sampling.
2. Bibliography and its importance in context of Research report.
3. Footnotes.
4. Cross tabulation.
5. Collection of Data Through Questionnaires.
6. Role of Research in Clinical Prosthetics.
7. Standard Deviation.
8. Spearman’s Rank Correlation.
9. Ogive.
10. Randomized Block Design (R.B. Design).

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

[AHS 0424] **APRIL 2024** **Sub. Code: 2474**

BACHELOR IN PROSTHETICS AND ORTHOTICS
THIRD YEAR - (Regulation 2017-2018 onwards)
PAPER IV – RESEARCH METHODOLOGY AND BIO STATISTICS
Q.P. Code: 802474

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. What is Data analysis and types of Data analysis?
2. Presentation of Data such as
   i) Tabular presentation
   ii) Frequency Distribution and
   iii) Graphical representation.
3. Sampling fundamental and need for Sampling.

II. Write notes on: **(8 x 5 = 40)**

1. Meaning and need for Research design.
2. Methods of Data collection.
3. Applications of Biostatistics.
4. Quantitative variables - Discrete and Continuous.
5. Measurement scales.
6. Source of error in Measurement.
7. Line diagram with example.
8. Sample size.

III. Short answers on: **(10 x 3 = 30)**

1. Definition of Biostatistics.
2. Define Data.
3. Qualitative variable with example.
4. Introduction to Research Methodology.
5. How to Frame Research Question?
6. Descriptive statistics.
7. Primary Data.
8. How to write statement of Research Problem?
9. Objective of Research.
10. Statistical Map / Cartogram.

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

[AHS 1125] **NOVEMBER 2025** **Sub. Code: 2474**

BACHELOR IN PROSTHETICS AND ORTHOTICS
THIRD YEAR - (Regulation 2017-2018 onwards)
PAPER IV – RESEARCH METHODOLOGY AND BIO STATISTICS
Q.P. Code: 802474

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

I. Elaborate on: **(3 x 10 = 30)**

1. Describe ANOVA (Analysis of Variance) and its applications.
2. What do you mean by "measures of central tendency"? Explain with the help of examples.
3. Define Research Variable. What is Independent and Dependent Variable? Design a research problem from Prosthetics and identify independent and dependent variable.

II. Write notes on: **(8 x 5 = 40)**

1. What is sampling? Explain the important methods of sampling commonly used.
2. What is the meaning of an Ogive graph? Explain briefly.
3. Briefly illustrate the use of charts and graphs in data analysis.
4. Discuss the types of Correlation. Explain with examples.
5. Define Research. What are the steps of research process? Describe in detail about Experimental Research Design.
6. What is Hypothesis? What is its importance in Research process?
7. Define Research problem. What is the necessity of defining Research problems?
8. What is Cohort study? Explain its types with examples. Draw the framework of Cohort study design.

III. Short answers on: **(10 x 3 = 30)**

1. Write down different types of Researches and explain them briefly.
2. Write the classification of Measurement Scales. Explain in detail.
3. Define Hypothesis. Write down different forms of Hypothesis.
4. Questionnaire design.
5. Define Sample and Population.
6. What are the characteristics of a good Hypothesis?
7. Mention applications of Biostatics in Orthotics & Prosthetics.
8. Give examples of Cross sectional study design.
9. What are the criteria for a good Research?
10. End note and its applications.

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