[LF 1014] **OCTOBER 2014** **Sub. Code: 2866**

M.Sc., NON-MEDICAL DEGREE EXAMINATION
SECOND YEAR
(New Regulation)
BRANCH II - BIOSTATISTICS
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code : 282866

Time : Three hours **Maximum : 100 marks**

I. Elaborate on : **(2 x 20 = 40)**

1. Explain in detail the difference between factor analysis and principal component analysis. Explain multiple classification analysis.

2. How would you differentiate between multiple discriminant analyses, regression analyses and logistic regression analysis?

II. Write notes on: **(10 x 6 = 60)**

1. What is Recursive Path Analysis? Explain with an Example.
2. Discuss the implication of Time series analysis with specific examples in epidemiological research.
3. Explain the use of Autocorrelation function (ACF) and Partial Autocorrelation function (PACF) plots in determining the parameters of AR and MA models.
4. What is multi-collinearity?
5. Write a critical note on Path analyses.
6. Explain the uses of Correlogram and Differencing in time series analyses and it's need.
7. What is Dendrogram graph? What inference you will get from that?
8. What guidelines can be used to determine the number of factors to extract in factor analysis? Explain each of the briefly.
9. Why we need for transformation in time series analysis?
10. Explain the nature and need for trend analysis of time series in epidemic studies.

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[LH 0415] **OCTOBER 2015** **Sub. Code: 2866**

M.Sc., NON – MEDICAL DEGREE COURSES
BRANCH II - BIOSTATISTICS
SECOND YEAR
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code: 282866

Time: Three hours **Maximum: 100 marks**

I. Elaborate on: **(2 x 20 = 40)**

1. What are the hierarchical clustering methods?
2. Explain factor analysis.

II. Write notes on: **(10 x 6 = 60)**

1. Autocorrelation and Partial Autocorrelation function.
2. Stationary process in time series.
3. Objectives of time series analysis.
4. ARMA Model.
5. Auto regressive process of order p.
6. Characteristics of time series data.
7. Random walk process.
8. Canonical correlation.
9. Multiple linear regression analysis.
10. PATH analysis.

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[LJ 1016] OCTOBER 2016 **Sub. Code: 2866**

M.Sc. BIOSTATISTICS EXAMS
SECOND YEAR
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code: 282866

Time: Three hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Explain the concept of principle component analysis and how does this procedure is used in your study?

2. Write down the minimum Excepted Cost of Misclassification (ECM) rule for assigning a new item to one of the two populations.

II. Write notes on: **(10 x 6 = 60)**

1. Explain quadratic classification rule.
2. Write down any three similarity measures.
3. Describe the application of time series analysis through an epidemic example.
4. Explain the component of the time series.
5. When a process is said to be stationary?
6. Distinguish between collinearity and multicollinearity.
7. Distinguish between ARMA and ARIMA.
8. Describe the features of any two forecasting models.
9. Explain how moving average process can be used in epidemiology.
10. Write a critical note on Path analysis.

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[LL 1017] OCTOBER 2017 **Sub. Code: 2866**

M.Sc. BIOSTATISTICS EXAMS
SECOND YEAR
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code : 282866

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Explain how discriminant analysis is used as a classification method.

2. Explain principal component analysis.

II. Write notes on: **(10 x 6 = 60)**

1. Direct and indirect effects in path analysis.
2. Optimal discriminant function.
3. Canonical correlation.
4. Bayes' rule in discriminant analysis.
5. Exogenous and endogenous variables in path analysis.
6. Antocorrelation.
7. Demographic time series.
8. Deterministic and stochastic models.
9. Autoregressive processes.
10. Periodogram.

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[LN 1018] OCTOBER 2018 **Sub. Code: 2866**

M.Sc. BIOSTATISTICS EXAMS
SECOND YEAR
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code: 282866

Time: Three hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Discriminant analysis and its application to epidemiology.

2. a) Autoregressive models.
   b) Moving average method of forecasting.

II. Write notes on: **(10 x 6 = 60)**

1. Expected cost of Misclassification rule.
2. Goodness of fit in factor analysis.
3. Difference between hierarchical and non-hierarchical cluster analysis.
4. Factors analysis.
5. Quadratic classification rule.
6. Trend and seasonal components of time series analysis.
7. Simple exponential smoothing in forecasting.
8. ARMA model.
9. Partial auto correlation function.
10. Multiplicative decomposition of time series data.

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[LP 1019] OCTOBER 2019 **Sub. Code: 2866**

M.Sc. BIOSTATISTICS EXAMS
SECOND YEAR
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code: 282866

Time: Three hours **Maximum: 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Path analysis and its application to epidemiology.

2. Discuss the implication of Time series analysis with specific examples in epidemiological research.

II. Write notes on: **(10 x 6 = 60)**

1. Uses of Auto Correlation Function (ACF) and Partial Auto Correlation Function (PACF) plots in determining the parameters of AR and MA models.
2. Uses of Correlogram and Differencing in time series analyses and it's need.
3. Need for transformation in time series analysis.
4. Stationary process in time series.
5. ARMA Model.
6. Difference between hierarchical and non-hierarchical analysis.
7. Quadratic classification rule.
8. Baye's rule in discriminant analysis.
9. Discriminant analysis.
10. Canonical correlation.

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

[AHS 0321] **MARCH 2021** **Sub. Code: 2866**

(OCTOBER 2020 EXAM SESSION)

M.Sc. BIOSTATISTICS

SECOND YEAR (From 2011-2012 onwards)

PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code : 282866

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

I. Elaborateon: **(2 x 20 =40)**

1. Explain the concept of principle component analysis and how does this procedure is used in Epidemiological study?

2. Explain the concept of discriminant analyses and explain how the discriminant analysis is used as a classification method?

II. Writenoteson: **(10 x 6 =60)**

1. Auto regressive processes
2. Explain quadratic classification rule.
3. Deterministic and stochastic models
4. Describe the application of time series analysis through an epidemic example.
5. Difference between hierarchical and non-hierarchical analysis.
6. Distinguish between collinearity and multicollinearity.
7. Distinguish between ARMA and ARIMA.
8. Describe the features of any two forecasting models.
9. Explain how moving average process can be used in epidemiology.
10. Write a critical note on Path analysis.

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

[AHS 0122] **JANUARY 2022** **Sub. Code: 2866**
(OCTOBER 2021 EXAM SESSION)

M.Sc. BIOSTATISTICS
SECOND YEAR (From 2011-2012 onwards)
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS
Q.P. Code : 282866

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

I. Elaborateon: **(2 x 20 =40)**

1. Explain the concept of discriminant analyses, regression analyses and logistic regression analysis

2. Discuss the implication of Time series analysis with specific examples in epidemiological research.

II. Writenoteson: **(10 x 6 =60)**

1. Discuss about factor analysis
2. What is multi-collinearity and explain the causes?
3. What is Recursive Path Analysis? Explain with an Example.
4. Explain the use of Autocorrelation function (ACF) and Partial Autocorrelation function (PACF) plots in determining the parameters of AR and MA models.
5. Write a short note on Quadratic Classification Rule.
6. Multiple linear regression analysis.
7. What is Dendrogram graph? How will you infer?
8. Canonical correlation
9. Objectives of time series analysis.
10. Random walk process.

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

[AHS 1022] **OCTOBER 2022** **Sub. Code: 2866**

M.Sc. BIOSTATISTICS
SECOND YEAR (From 2011-2012 onwards)
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code : 282866

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

I. Elaborateon: **(2 x 20 =40)**

1. Explain the concept of principle component analysis and how does this procedure is used in Epidemiological study?

2. Explain the concept of time series analysis with a suitable epidemiological example. Explain in detail about ARMA and ARIMA and Distinguish between ARMA and ARIMA.

II. Write notes on: **(10 x 6 =60)**

1. Auto regressive processes.
2. Explain quadratic classification rule.
3. Deterministic and stochastic models.
4. Describe logistic regression and explain the application of logistic regression with suitable example.
5. Difference between hierarchical and non-hierarchical analysis.
6. Distinguish between collinearity and multicollinearity.
7. Canonical correlation.
8. Describe the features of any two forecasting models.
9. Explain how moving average process can be used in epidemiology.
10. Write a critical note on Path analysis.

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

[AHS 1023] **OCTOBER 2023** **Sub. Code: 2866**

M.Sc. BIOSTATISTICS
SECOND YEAR (From 2011-2012 onwards)
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code: 282866

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

I. Elaborate on: **(2 x 20 =40)**

1. Explain principal component analysis.

2. Discriminant analysis and its application to epidemiology.

II. Write notes on: **(10 x 6 =60)**

1. Canonical correlation.
2. Bayes' rule in discriminant analysis.
3. Distinguish between collinearity and multicollinearity.
4. Goodness of fit in factor analysis.
5. Distinguish between ARMA and ARIMA.
6. Stationary process in time series.
7. Objectives of time series analysis.
8. Random walk process.
9. Explain how moving average process can be used in epidemiology.
10. What is multi-collinearity?

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

[AHS 1024] **OCTOBER 2024** **Sub. Code: 2866**

M.Sc. BIOSTATISTICS
SECOND YEAR (From 2011-2012 onwards)
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code: 282866

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

I. Elaborate on: **(2 x 20 =40)**

1. Explain the concept of principle component analysis and how does this procedure is used in Epidemiological study?

2. a. Explain factor analysis.
   b. Principal component analysis.

II. Write notes on: **(10 x 6 =60)**

1. Auto regressive processes.
2. Deterministic and stochastic models.
3. Why we need for transformation in time series analysis?
4. Explain the nature and need for trend analysis of time series in epidemic studies.
5. Exogenous and endogenous variables in path analysis.
6. Demographic time series.
7. Difference between hierarchical and non-hierarchical cluster analysis.
8. Quadratic classification rule.
9. Simple exponential smoothing in forecasting.
10. ARMA model.

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

[AHS 1025] **OCTOBER 2025** **Sub. Code: 2866**

M.Sc. BIOSTATISTICS
SECOND YEAR (From 2011-2012)
PAPER II – APPLIED MULTIVARIATE ANALYSIS AND TIME SERIES ANALYSIS

Q.P. Code: 282866

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

I. Elaborateon: **(2 x 20 =40)**

1. a) Explain hierarchical clustering methods.
   b) Principal component analysis.

2. Discriminant analysis and its application to epidemiology

II. Write notes on: **(10 x 6 =60)**

1. Explain factor analysis.
2. Autoregressive processes.
3. Deterministic and stochastic models.
4. Why do we need transformation in time series analysis?
5. Simple exponential smoothing in forecasting.
6. Explain the nature and need for trend analysis of time series in epidemic studies.
7. Exogenous and endogenous variables in path analysis.
8. ARMA model.
9. Demographic time series.
10. Quadratic classification rule.

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