

[LF 1014]

OCTOBER 2014

Sub. Code: 2865

**M.Sc., NON-MEDICAL DEGREE EXAMINATION  
SECOND YEAR  
(New Regulation)  
BRANCH II - BIOSTATISTICS  
PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code : 282865*

**Time : Three hours**

**Maximum : 100 marks**

**I. Elaborate on :**

**(2 x 20 = 40)**

1. Explain the adequacy of logistic regression analysis by
  - a) evaluating the model and its fit
  - b) assessing the predictive efficiency and
  - c) investigating the assumptions
  
2.
  - a) Why do we perform multiple linear regression analysis? what are its assumptions?
  - b) Explain the assessment of goodness of fit in multiple regression analysis.
  - c) How will you handle outliers and influential observations?

**II. Write notes on:**

**(10 x 6 = 60)**

1. Explain dummy variables and its role in regression analysis
2. Explain multicollinearity by giving an example in medical research.
3. Compare the odds ratio and relative risk.
4. Explain multinomial and ordinal logistic regression.
5. Explain conditional logistic regression.
6. What is Poisson regression? Give an example.
7. What is confounding and interaction? Explain by giving an example.
8. What is censored data? Explain proportional hazard assumption.
9. Explain the term 'survival' and 'hazard' in survival analysis.
10. Explain the measures of agreement using kappa and weighted kappa.

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[LH 0415]

OCTOBER 2015

Sub. Code: 2865

**M.Sc., NON – MEDICAL DEGREE COURSES  
BRANCH II - BIOSTATISTICS  
SECOND YEAR  
PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code: 282865*

**Time: Three hours**

**Maximum: 100 marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. (a) Explain the role of multiple logistic regression analysis by giving an example.  
(b) Mention the use of Negalkar R-square in logistic regression?  
(c) Explain the two major components of discrimination and calibration in the evaluation of logistic regression model performance.
2. (a) Explain the proportional hazard regression analysis.  
(b) How will you assess the goodness of fit in Cox-regression?  
(b) What are the problems encountered in survival analysis?

**II. Write notes on:**

**(10 x 6 = 60)**

1. Why do we perform multiple regression analysis? What are its assumptions?
2. How will you use nominal, ordinal and numerical explanatory variables in multiple linear regression analysis?
3. What is confounding and interaction? Explain by giving an example.
4. Compare the odds ratio and relative risk.
5. Explain multinomial and ordinal logistic regression.
6. What is censored data? What is informative censoring?
7. What is Kaplan-Meier estimate? Explain the use of log rank test.
8. Explain a matched case-control study.
9. Explain the measures of agreement using kappa and weighted kappa.
10. What is generalized linear model?

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[LJ 1016]

OCTOBER 2016

Sub. Code: 2865

**M.Sc. BIOSTATISTICS EXAMS  
SECOND YEAR  
PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code: 282865*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain with example for Kaplan – Meir survival analysis.
2. a) How do you evaluate the model and fit in logistic regression?  
b) Assumptions for logistic regression.

**II. Write notes on:**

**(10 x 6 = 60)**

1. Explain unconditional logistic regression.
2. Role of dummy variables in regression analysis.
3. Cox and Snell R square.
4. Difference between odds ratio and relative risk.
5. Censored data with example.
6. Ordinal regression.
7. Weighted Kappa.
8. Hypothesis of independence.
9. Stratified analysis.
10. Log linear models for three way table.

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[LL 1017]

OCTOBER 2017

Sub. Code: 2865

**M.Sc. BIOSTATISTICS EXAMS  
SECOND YEAR  
PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code: 282865*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain multiple regression analysis in detail.
2. Describe log linear models for two and three way tables.

**II. Write notes on:**

**(10 x 6 = 60)**

1. Explain ordinal, polytomous and count data.
2. Describe residual analysis.
3. Explain conditional models of a logistic regression analysis.
4. Describe the sampling distributions for discrete data.
5. How will you test the hypothesis of Independence in a contingency table?
6. Explain measure of agreement.
7. Explain Kaplan-Meier estimate.
8. Describe log-rank test and explain its uses.
9. What is meant by time dependant covariate?
10. What is stratified analysis?

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[LN 1018]

OCTOBER 2018

Sub. Code: 2865

**M.Sc. BIOSTATISTICS EXAMS  
SECOND YEAR  
PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code: 282865*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. What are the measure of agreement? What are the conditional and unconditional probability models for binary variables?
2. What is Count data and Poission regression in Multiple regression?  
What are the types of variables used in multiple regression with an example?

**II. Write notes on:**

**(10 x 6 = 60)**

1. Explain Logistic regression for ordinal data.
2. How to estimate odds ratio?
3. Explain residual analysis.
4. Hypothesis of homogeneity.
5. What are the measure of association?
6. Measure of Kappa and weighted kappa.
7. Conditional logistic regression.
8. Weibull for parametric distribution.
9. Log rank for uncensored data.
10. Cox's proportional Hazard model.

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[LO 0519]

MAY 2019

Sub. Code: 2865

**M.Sc. BIOSTATISTICS EXAMS  
SECOND YEAR  
PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code: 282865*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Multiple regression for continuous data and residual analysis.
2. Cox-proportional hazard model and log plot.

**II. Write notes on:**

**(10 x 6 = 60)**

1. Sources of multicollinearity.
2. Logistic regression for ordinal data.
3. Dummy variables in multiple regression.
4. Poisson regression.
5. Contingency tables.
6. Relative risk and odds ratio.
7. Weighted Kappa measure of agreement.
8. Left and right censoring.
9. Logrank test for censored data.
10. Stratified analysis.

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[LP 1019]

OCTOBER 2019

Sub. Code: 2865

**M.Sc. BIOSTATISTICS EXAMS  
SECOND YEAR  
PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code: 282865*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Residual analysis and methods of scaling residuals.
2. Log linear models for two and three way models.

**II. Write notes on:**

**(10 x 6 = 60)**

1. Logistic regression.
2. Testing of multiple regression coefficients.
3. Ordinal, polytomous and count data.
4. Poisson regression.
5. Estimation of odds ratio.
6. Measures of agreement.
7. Collapsibility and model building in categorical data analysis.
8. Log rank test for censored data.
9. Proportional hazard model.
10. Stratified analysis.

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

[AHS 0321]

**MARCH 2021**

**Sub. Code: 2865**

**(OCTOBER 2020 EXAM SESSION)**

**M.Sc. BIOSTATISTICS**

**SECOND YEAR (From 2011-2012 onwards)**

**PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code : 282865*

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate notes on:**

**(2 x 20 = 40)**

1. Assumptions of the model and fit in logistic regression.
2. Log linear models for two and three way tables.

**II. Write Short Notes on:**

**(10x6 = 60)**

1. Sources of multicollinearity
2. Analysis of contingency tables.
3. Hypothesis of homogeneity and Independence.
4. Logistic model for ordinal data and Polytomous data.
5. Kappa measure of agreement.
6. Censored data.
7. Relative risk and odds ratio.
8. Weibull and exponential distribution.
9. Hazard functions.
10. Stratified analysis

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

[AHS 0122]

**JANUARY 2022  
(OCTOBER 2021 EXAM SESSION)**

**Sub. Code: 2865**

**M.Sc. BIOSTATISTICS  
SECOND YEAR (From 2011-2012 onwards)  
PAPER I – APPLIED REGRESSION METHODS  
*Q.P. Code : 282865***

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate notes on:**

**(2 x 20 = 40)**

1. Count data and Poisson regression.
2. Types of censoring.

**II. Write Short Notes on:**

**(10x6 = 60)**

1. Mantel-Haenszel procedure.
2. Estimating Odds ratio.
3. Logistic model for ordinal data.
4. Log linear models for two way tables.
5. Collapsibility and model building.
6. Cox's proportional hazard model.
7. Log plot.
8. Exponential distribution.
9. Dummy variables in multiple regression.
10. Analysis of contingency tables.

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

[AHS 1022]

OCTOBER 2022

Sub. Code: 2865

**M.Sc. BIostatistics  
SECOND YEAR (From 2011-2012 onwards)  
PAPER I – APPLIED REGRESSION METHODS**

*Q.P. Code : 282865*

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

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

1. Multiple regression for continuous data and residual analysis.
2. Kaplan – Meir survival analysis with an example.

**II. Write Short Notes on: (10x6 = 60)**

1. Sources of multicollinearity
2. Unconditional logistic regression.
3. Analysis of contingency tables.
4. Log linear models for three way tables.
5. Weighted Kappa.
6. Cox's proportional hazard model.
7. Relative risk and odds ratio.
8. Generalized Wilcoxon test for censored data.
9. Logistic regression for ordinal, polytomous data.
10. Hypothesis of independence.

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