

MANIPAL UNIVERSITY

**THIRD SEMESTER MASTER OF PUBLIC HEALTH DEGREE
EXAMINATION – JUNE 2015**

SUBJECT: MPH – 627: ADVANCED BIOSTATISTICS FOR PUBLIC HEALTH

Saturday, June 27, 2015

Time: 10:00 – 13:00 Hrs.

Maximum Marks: 70

1. Describe in detail defining all the columns, the life table method of estimating survival function. (7 marks)
2. Explain multiple imputation with merits and demerits. (5 marks)
3. With the help of an example explain multivariate analysis and its advantages. (5 marks)
4. What are the goals of factor analysis? What is the objective of factor rotation? (4+2 = 6 marks)
5. Based on the information given below in the table, answer the following:
- 5A. Do males or females have a more favorable mortality experience in Rateboro? Cite the rates or other figures on which you have based your decision.
- 5B. Briefly discuss the reasons for rate adjustment.

Population and Deaths in 1980 in Rateboro Adults by Age and Sex and U.S. Total

Age	Rateboro					United States	
	Males		Females		Rate	Both Sexes	
	Pop.	Deaths	Pop.	Deaths		Pop*	Deaths*
18-34	900	6	800	1		60,000	90
35-59	800	3	800	5		45,000	270
60-74	300	15	500	10		20,000	600
75 +	200	22	500	38		15,000	1500
Total	2200	46	2600	54		140,000	2460

(*In thousands Population and deaths for Rateboro are actual figures; U.S.population is the standard)

(4+3 = 7 marks)

6. Under following headings explain the z test for testing interaction between two exposure variables in a case control study:
 - 6A. Null and alternative hypothesis
 - 6B. Test statistic
 - 6C. Inference

(2+2+2 = 6 marks)

7. Illustrate applications of logistic regression in the context of epidemiological studies. (10 marks)
8. Derive OR, RR and differentiate between both. (6 marks)
9. Define confounding. Explain with the help of an example. (6 marks)
10. Describe the use of Poisson regression for modeling binary outcome from a cohort study. (6 marks)
11. What is time series? Give two examples where time series analysis can be used in public health. (2+2+2 = 6 marks)

