Reg. No.										

MANIPAL UNIVERSITY

FRIST YEAR MSc. MLT / MSc. NMT / SECOND SEMESTER M.Sc. CLINICAL PSYCHOLOGY / M.Sc. EXERCISE AND SPORTS SCIENCE / M.Sc. HHIA DEGREE EXAMINATION – DECEMBER 2015

SUBJECT: BIOSTATISTICS / PAPER IV: ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY (NR) / ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY (MCP 106) / RESEARCH METHODOLOGY & BIOSTATISTICS (MES 608 T) / EPIDEMIOLOGY & BIOSTATISTICS (MHI 606) (2013 SCHEME)

Tuesday, December 15, 2015

Time: 10:00 – 13:00 Hrs. Max. Marks: 80

✍ **Answer ALL the questions.**

1A. Explain rate ratio and proportion with example.

1B. What is Stratified sampling? Explain the procedure with Example. List the advantages and disadvantages of this technique.

(5+5 = 10 marks)

2A. Write short note on Binomial distribution.

2B. In the study of fingerprints an important quantitative characteristic is the total ridge count for the 10 fingers of an individual. Suppose that the total ridge counts of individuals in a certain population are approximally normally distributed with a mean of 140 and a standard deviation of 50. Find the probability that an individual picked at random from this population will have a ridge count:

i) Between 140 and 190

ii) Less than 90

(5+5 = 10 marks)

3A. Define the following terms:

i) Inference

ii) Type one and type two error in testing of hypothesis

iii) Level of significance

(2+2+1 = 5 marks)

3B. Describe with example the situation in which you would use a one way ANOVA. What is the null hypothesis tested by analysis of variance? List the assumptions of ANOVA. Why not just compute t-tests among all pairs of means instead of computing an analysis of variance?

(1+1+2+1 = 5 marks)

4A. Differentiate parametric and non-parametric tests. Explain the situation for Mann-Whitney U test.

4B. Write short note on the application of Chi-square test.

(5+5 = 10 marks)

5A. A hospital administrator wishes to wishes to estimate the mean weight of babies born in her hospital. How large a sample of birth records should be taken if she wants a 95 percent confidence interval with error margin d=0.5 pound? Assume that a reasonable estimate of σ is 1 pound. (Given Z 1-α/2=1.96)

5B. Write a short note on Survival Analysis.

(5+5 = 10 marks)

6. Discuss Case Control study under:

6A. Design

6B. Features

6C. Steps

6D. Advantages and disadvantages

(10 marks)

7. Outline the structure of a research protocol.

(10 marks)

8. **Write short note on the following:**

8A. Cross sectional study design

8B. Evaluation of diagnostic tests

(5+5 = 10 marks)