Reg. No.										

MANIPAL UNIVERSITY

FIRST YEAR MOT/M.Sc. MLT/M.Sc. RT (NR)/MASTER OF OPTOMETRY/M.Sc. MIT/ M.Sc. ECHOCARDIOGRAPHY & (2012 PT)/MSc. CARDIAC CATHETERIZATION AND INTERVENTIONAL TECHNOLOGY DEGREE EXAMINATION – JUNE 2014

SUBJECT: ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY/BIOSTATISTICS/RESEARCH METHDOLOGY & BIOSTATISTICS/EPIDEMIOLOGY & BIOSTATISTICS

Tuesday, June 03, 2014

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

✍ **Answer ALL the questions.**

1A. Define the various measures of dispersion.

1B. Distinguish between sampling and non-sampling errors.

(5+5 = 10 marks)

2A. Write a short note on binomial distribution.

2B. Define sampling distribution and standard error. A sample of 40 liver cirrhosis subjects were selected and the mean serum potassium level was observed to be 5.4 mEq/L with standard deviation of 1.8 mEq/L. Find the 99% confidence interval for mean serum potassium level among liver cirrhosis subjects. (The standard normal table value for 99% confidence level is 2.58).

(5+ (2+3) = 10 marks)

3A. Define type I error, type II error, Level of significance, Power and P value.

3B. What do you mean by non-parametric tests? What are the advantages and disadvantages of non-parametric tests over parametric tests?

(5+5 = 10 marks)

4. Twenty four experimental animals with vitamin D deficiency were divided equally into two groups. Group 1 received treatment consisting of a diet that provided vitamin D. The second group was not given any treatment. At the end of the experimental period, serum calcium levels were measured with the following results.

Group	Mean (mg/100ml)	Standard deviation (mg/100ml)
Treated	11.1	1.5
Untreated	7.8	2.0

4A. Name the statistical test used to test whether mean serum calcium levels differs significantly between the two groups.

4B. Write the null hypothesis and alternate hypothesis for the above test.

4C. What are the assumptions for this test?

4D. Compute the test statistic value.

4E. Briefly explain how do you take a decision about the acceptance or rejection of null hypothesis?

(1+1+2+4+2 = 10 marks)

5A. A study was planned to find the prevalence of overweight among people in the age group of 40 to 50 years in an urban community. What is the minimum sample size required for the study if the absolute margin of error is fixed at 3% and confidence level of 95%? A similar study conducted three years before in the same population reported the prevalence of overweight as 18%. (The standard normal table for 95% confidence level is 1.96).

5B. What do you mean by blinding in RCTs? Briefly explain the various types of blinding.

(5+5 = 10 marks)

6. With the help of a flow chart explain the design of a case control study. Define the measure of strength of association between exposure and event in a case control study. Enumerate the advantages and disadvantages in a case control study.

(4+2+4 = 10 marks)

7A. In order to assess the validity of a diagnostic test, it was applied on 250 individuals with disease and 600 without disease. The test resulted in a positive diagnosis for 200 out of those with disease and 100 of those without disease. Construct appropriate 2 × 2 table and calculate sensitivity, specificity, positive predictive value and negative predictive value of the test.

7B. Write a short note on survival analysis.

(5+5 = 10 marks)

8. Explain the structure of a research protocol.

(10 marks)

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FIRST YEAR M.Sc. (RESPIRATORY THERAPY) DEGREE EXAMINATION – JUNE 2014

SUBJECT: CRITICAL CARE MEDICINE – I

(SPECIALTY: ADULT CARDIO RESPIRATORY CARE)

Monday, June 09, 2014

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

✍ **Answer ALL the questions.**

1. What are the causes of Acute Respiratory Distress Syndrome (ARDS)? Discuss the pathophysiology and clinical features of ARDS. Describe briefly the management of ARDS.

(4+4+4+4 = 16 marks)

2. What are the different diagnostic criteria of fat embolism and pulmonary thromboembolism?

(8+8 = 16 marks)

3. Write short notes on:

3A. Management of severe hyperkalemia

3B. Tension Pneumothorax

3C. Hypothermia

3D. Metabolic alkalosis

3E. Rheumatoid arthritis

3F. Interstitial Lung Disease

(8 marks × 6 = 48 marks)