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.O.T. DEGREE EXAMINATION – JUNE 2014

SUBJECT: PAPER – II: OCCUPATIONAL THERAPY: KNOWLEDGE BASE

Saturday, June 07, 2014

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

✍ **Answer ALL the questions. Draw diagram wherever necessary.**

✍ **Long Questions:**

1. Define and describe torque. Explain internal and external torques. Calculate the external torque produced by 6 kg barbells held at 30 and 90 degrees of elbow flexion, and distance from the elbow joint to the palmar creases where the barbell rests is 32 cm.

(6+6+8 = 20 marks)

2. Discuss the therapeutic and orthotic interventions for postural dysfunctions.

(10+10 = 20 marks)

3. Describe the neuromuscular junction and its functions.

(20 marks)

4. **Write short notes on:**

4A. Explain the principle of self-organization with an example of non- linear behaviour in human functioning.

(10 marks)

4B. Describe the monosynaptic reflex arc with a labelled cross sectional diagram of spinal cord.

(4+6 = 10 marks)

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FIRST YEAR M.O.T. DEGREE EXAMINATION – JUNE 2014

SUBJECT: PAPER – III: ASSESSMENTS IN OCCUPATIONAL THERAPY

Tuesday, June 10, 2014

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

Answer ALL the questions:

Long Questions:

1. Discuss about the test components, psychometric properties and administering method of Monofilament. Discuss any three areas of application of its results by occupational therapist.

(4+4+6+6 = 20 marks)

2. Describe the application of critiquing assessments framework to the Functional Independence Measure (FIM) scale.

(20 marks)

3. Discuss any two instruments used to measure quality of life (QOL). Explain the difficulties in analysis and interpretation of scores of QOL assessment scales.

(12+8 = 20 marks)

4. **Short Notes:**

4A. Define functional capacity evaluation and explain its significance in occupational therapy setting.

4B. Discuss in detail the essential of measuring muscle strength.

(10 marks × 2 = 20 marks)

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FIRST YEAR M.O.T. DEGREE EXAMINATION – JUNE 2014

SUBJECT: PAPER – IV: OCCUPATIONAL THERAPY: TOOLS FOR PRACTICE

Thursday, June 12, 2014

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

Answer all questions:

Long questions:

1. Describe principles, objective and approaches of community based rehabilitation (CBR). Discuss the legislation governing implementation and practice of CBR in India.

(10+10 = 20 marks)

2. Discuss indication of Knee-Ankle-Foot Orhtoses (KAFO). Describe the parts of plastic-metal KAFO and its important check-out features.

(10+10 = 20 marks)

3. Discuss the Person-environment-occupation (P-E-O) model and environmental press theory as the basis of occupational therapy role in architectural modification. Describe assessment of physical environment of home on the basis of universal design.

(10+10 = 20 marks)

4. Short Notes:

4A. Describe specific intervention strategies for home management.

4B. Describe the role and responsibilities of an occupational therapy practitioner as independent private consultant.

(10 marks × 2 = 20 marks)