Reg. No.										

MANIPAL UNIVERSITY

FRIST YEAR MASLP / MOT / MSc. MLT / MSc. RT / MSc. ECHOCARDIOGRAPHY / OPTOMETRY / MSc. MIT / MSc. RRT & DT DEGREE EXAMINATION – JUNE 2017

SUBJECT: STATISTICS & RESEARCH METHODS / ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY / BIOSTATISTICS / ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY / PAPER IV: EPIDEMIOLOGY & BIOSTATISTICS / PAPER IV: RESEARCH METHODOLOGY & BIOSTATISTICS / BIOSTATISTICS/ ADVANCED BIOSTATISTICS & RESEARCH METHODOLOGY

Friday, June 02, 2017

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

1. **Define the following:**

1A. Any three measures of central tendency

1B. Qualitative and quantitative variables with examples

1C. Sampling errors and non-sampling errors

1D. Sampling frame, probability sampling and non-probability sampling

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

2A. Write the properties of normal distribution. List any two applications of normal distribution.

2B. The mean rate of adenosine triphosphate among a sample of 30 insulin resistant children was found to be 6 µmol/g of muscle/min with standard deviation of 2 µmol/g of muscle/min. Find the 95% and 99% confidence intervals for the mean rate of adenosine triphosphate for the study population.

(5+5 = 10 marks)

3A. Define type I error, type II error, level of significance and power of a statistical test of significance.

3B. Hypothermia is a problem for extremely low birth weight infants. A study was conducted to investigate whether wrapping these infants in polyethylene bags in the delivery room and while they are being transferred to the neonatal intensive care unit affects the survival of babies. The results of the study conducted among 140 extreme low birth weight babies are given in the following table:

Warming treatment	Number of infants		Total
	Lived	dead	
Polyethylene bag	63	7	70
Traditional	61	9	70
Total	124	16	140

Test at 5% level of significance whether mortality among the extreme low birth weight infants is associated with the kind of warming treatment given. The table value for 5% level of significance is 3.84.

(4+6 = 10 marks)

4. Discuss independent sample t test and paired t test with an example.

(10 marks)

5. Explain case control study under the headings:
   i) design with the help of a flow chart
   ii) measure of strength of association
   iii) merits
   iv) demerits

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

6A. Write a short note on randomization in clinical trials.

6B. A randomized controlled trial has been planned to compare the effects of low fat diet with the diet recommended by the American Diabetic Association. The outcome variable is the total cholesterol (in mg/dL). What is the minimum number of subjects required in each group to detect a difference in total cholesterol of 20 mg/dL between the two groups with 90% power and 5% level of significance? Based on the earlier experience the standard deviation of total cholesterol in the population is about 35 mg/dL. The table value for 90% power and 5% level of significance is 1.28 and 1.96 respectively.

(5+5 = 10 marks)

7. Write short notes on:

7A. Validity of diagnostic test

7B. Structure of research thesis

7C. Meta-analysis

7D. Logistic regression

(5 marks × 4 = 20 marks)

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FIRST YEAR M.Sc. ECHOCARDIOGRAPHY DEGREE EXAMINATION – JUNE 2017

SUBJECT: PAPER I: EMBRYOLOGY & ULTRASOUND PHYSICS

(2015 SCHEME)

Monday, June 05, 2017

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

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

1. Explain formation of endocardial cushion and ventricular looping in embryo in detail.

(20 marks)

2. Explain Umbilical and vitelline vein formation in detail.

(20 marks)

3. **Short notes questions:**

3A. Pericardial cavity in embryo

3B. Color Doppler imaging

3C. Oogenesis

3D. Attenuation and absorption

3E. Harmonic imaging

(8 marks × 5 = 40 marks)

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FIRST YEAR M.Sc. ECHOCARDIOGRAPHY DEGREE EXAMINATION – JUNE 2017

SUBJECT: PAPER II: CLINICAL CARDIOLOGY

(2015 SCHEME)

Wednesday, June 07, 2017

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

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

1. Explain approach of chest x-ray in detail.

(20 marks)

2. Explain chest pain evaluation in detail.

(20 marks)

3. **Short notes questions.**

3A. Non ST elevation myocardial Infarction

3B. Diastolic dysfunction

3C. Hemoptysis

3D. Pulsus parvus et tardus

3E. GP IIb/IIIa inhibitors

(8 marks × 5 = 40 marks)

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FIRST YEAR M.Sc. ECHOCARDIOGRAPHY DEGREE EXAMINATION – JUNE 2017

SUBJECT: PAPER III: ISCHEMIC/VALVULAR HEART DISEASE
(2015 SCHEME)

Friday, June 09, 2017

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

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

1. Explain the echocardiographic assessment of Mitral regurgitation severity with limitations for each method in detail.

(20 marks)

2. Explain 2014 ACC/AHA guidelines for AVR indications in Aortic stenosis.

(20 marks)

3. **Short Notes Questions:**

3A. Wilkins score
3B. Myocardial response to chronic AS
3C. Severity assessment of Tricuspid regurgitation
3D. Squatting Echo
3E. Ventricular aneurysm

(8 marks × 5 = 40 marks)