MANIPAL UNIVERSITY

FIRST YEAR MOT/M.Sc. (RRT & DT)/ M.Sc. RT/ M.A.S.L.P/M.Sc. MLT/M.Sc. MIT/ M.Sc. ECHOCARDIOGRAPHY/M. OPT DEGREE EXAMINATION – JUNE 2015

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

Tuesday, June 02, 2015

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

✍ **Answer ALL the questions.**

1A. With the help of suitable examples discuss the quantitative and qualitative variables.

1B. Explain systematic random sampling with an example. What are the advantages and disadvantages of this method?

$$(5+5 = 10 \text{ marks})$$

2A. Discuss skewness and kurtosis.

2B. A sample of 50 liver cirrhosis subjects were selected and the mean serum potassium level was observed to be 5.4 mEq/L with standard deviation of 2.5 mEq/L. Find the 95% and 99% confidence intervals for mean serum potassium level among liver cirrhosis subjects. (The standard normal table values for 95% and 99% confidence levels are 1.96 and 2.58 respectively).

$$(5+5 = 10 \text{ marks})$$

3A. Enumerate the steps in hypothesis testing.

3B. What do you mean by non-parametric tests? With suitable examples briefly explain the applications of Mann Whitney U test and Wilcoxon signed rank test.

$$(5+5 = 10 \text{ marks})$$

4. The mean serum cholesterol level of 25 randomly selected normal healthy men is 240 mg/dl with a standard deviation of 40 mg/dl. The mean serum cholesterol level of 20 randomly selected men who undergone coronary bypass surgery during the preceding two year period is 260 mg/dl with standard deviation of 56 mg/dl.

4A. Name the statistical test used for comparing the mean serum cholesterol levels between the two groups.

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

4C. What are the assumptions for this test?

4D. Compute the value of test statistic for the above study.

4E. Briefly explain how do you take a decision on acceptance and rejection of null hypothesis for the above study.

$$(1+1+2+4+2 = 10 \text{ marks})$$

5A. Explain how do you compute sample size for comparing means of two independent groups.

5B. A research team conducted a case-control study examining the relationship between daily alcohol consumption and liver cancer. The team selected 2000 cases and 2000 controls and observed that 700 cases and 400 controls daily take alcohol. Make a two by two table and find the appropriate measure of strength of association between alcohol consumption and liver cancer. How do you interpret it?

(5+5 = 10 marks)

6. What do you mean by randomization in RCTs? Explain the simple, block and stratified randomization methods.

(1+9 = 10 marks)

7. Explain the structure of research thesis.

(10 marks)

8. **Write short notes on:**

8A. Survival analysis

8B. Validity and reliability of diagnostic tools

(5+5 = 10 marks)

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MANIPAL UNIVERSITY

FIRST YEAR M.Sc. ECHOCARDIOGRAPHY DEGREE EXAMINATION – JUNE 2015

SUBJECT: PAPER I: EMBRYOLOGY & ULTRASOUND PHYSICS
(2012 SCHEME)

Thursday, June 04, 2015

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

✍ **Answer ALL the questions.**

✍ **Draw the diagram wherever necessary.**

1. Explain cell division in detail.

(20 marks)

2. Explain different types of ultrasound transducers and its applications in medical field in detail.

(20 marks)

3. **Short notes questions:**

3A. Cardiac looping

3B. Continuous wave Doppler

3C. Formation of germ layers

3D. Mitosis

3E. Harmonic imaging

(8 marks × 5 = 40 marks)

MANIPAL UNIVERSITY

FIRST YEAR M.Sc. ECHOCARDIOGRAPHY DEGREE EXAMINATION – JUNE 2015

SUBJECT: PAPER II: CLINICAL CARDIOLOGY
(2012 SCHEME)

Saturday, June 06, 2015

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

✍ Answer ALL the questions.

✍ Draw the diagram wherever necessary.

1. Explain examination of the arterial pulse in detail.

(20 marks)

2. Explain evaluation of dyspnea in detail.

(20 marks)

3. **Short notes questions.**

3A. Acute RV myocardial Infarction

3B. Narrow complex Tachycardia

3C. LV failure

3D. Hemoptysis

3E. Diuretics

(8 marks × 5 = 40 marks)

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FIRST YEAR M.Sc. ECHOCARDIOGRAPHY DEGREE EXAMINATION – JUNE 2015

SUBJECT: PAPER III: ISCHEMIC/VALVULAR HEART DISEASE
(2012 SCHEME)

Tuesday, June 09, 2015

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

✍   **Answer ALL the questions.**

✍   **Draw the diagram wherever necessary.**

1.   Explain low gradient severe Aortic stenosis with preserved and depressed Ejection fraction.

(20 marks)

2.   Explain mitral valve anatomy in surgeons perspective. Define certain MV repair technique in detail.

(20 marks)

3.   **Short notes questions.**

3A.   Organic versus functional MR

3B.   LA and LV hemodynamic changes in severe MR

3C.   LV adaptation to Aortic regurgitation

3D.   Echo assessment of PS

3E.   Ventricular septal rupture

(8 marks × 5 = 40 marks)