

CVT

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
METHODOLOGY & 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)



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)



Reg. No.									
----------	--	--	--	--	--	--	--	--	--

MANIPAL UNIVERSITY

FIRST YEAR M.Sc. CARDIAC CATHETERIZATION AND INTERVENTIONAL TECHNOLOGY DEGREE EXAMINATION – JUNE 2014

SUBJECT: PAPER I: BASIC IN INTERVENTION

Thursday, June 05, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ **Answer all the questions, Draw the diagram wherever necessary.**

1. Explain design and construction of stents. Add a note on future direction in stents.
2. Explain functioning of cardiac cath lab and add a note on radiation hazards and radiation protective measure.

(20 marks × 2 = 40 marks)

3. Write short note on:

- 3A. Infection control in cath lab
- 3B. Complications of arterial access
- 3C. Types of coronary wires, merits and de-merits
- 3D. ETO reesterilization
- 3E. Contrast nephropathy

(8 marks × 5 = 40 marks)



MANIPAL UNIVERSITY

FIRST YEAR M.Sc. ECHOCARDIOGRAPHY DEGREE EXAMINATION – JUNE 2014

SUBJECT: PAPER I: EMBRYOLOGY & ULTRASOUND PHYSICS

Thursday, June 05, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

Answer all the questions. Draw the diagram wherever necessary.

1. Explain the development of Atria and absorption of Pulmonary veins. (20 marks)

2. Explain developmental facts of pericardial cavity in embryo and brief on pericardial disease. (20 marks)

3. Short notes questions:

3A. Frame rate and scan angle in ultrasound

3B. Functions of ductus arteriosus

3C. M-mode Echocardiography

3D. Conotruncal anomaly

3E. Focusing in transducers

(8 marks × 5 = 40 marks)

