

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 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 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 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 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. (RESPIRATORY THERAPY) DEGREE EXAMINATION – JUNE 2015

SUBJECT: BASIC SCIENCES
(SPECIALTY: ADULT CARDIO RESPIRATORY CARE)
(2013 SCHEME)

Thursday, June 04, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

LONG NOTES:

1. Explain in detail the cardiopulmonary events at birth.

(16 marks)

2. Explain in detail the events of the cardiac cycle.

(16 marks)

3. **Short notes:**

3A. Airway resistance

3B. Mucus controlling agents

3C. Regional inequalities in ventilation and perfusion

3D. Functions of the lung

3E. Bones of the thoracic cage, vertebrae and sternum

3F. Fick's formula and significance of $C(a-v)O_2$

(8 marks × 6 = 48 marks)



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MANIPAL UNIVERSITY

FIRST YEAR M.Sc. (RESPIRATORY THERAPY) DEGREE EXAMINATION – JUNE 2015

SUBJECT: BASIC SCIENCES
(SPECIALTY: NEONATAL & PAEDIATRIC RESPIRATORY CARE)
(NR - 2013 SCHEME)

Thursday, June 04, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

✍ Draw diagrams wherever required.

1. Discuss the various stages of lung development in neonates and children. Write a brief note on its clinical significance.

(16 marks)

2. Discuss the normal acid base balance. Define Hypokalemia. Discuss the etiology and management of Hypokalemia.

(16 marks)

3. **Write short notes on following:**

3A. Discuss the indications, mode of action and adverse effects of inhaled corticosteroids.

3B. Discuss the mechanics of exhalation.

3C. Discuss the principles, application, advantages and disadvantages of Pulse oxymetry.

3D. Discuss the characteristics of pulmonary function testing in obstructive and restrictive lung disease.

3E. Discuss the oxygen transport. Add a note on oxygen dissociation curve and the factors affecting oxygen dissociation curve.

3F. Discuss the events of cardiac cycle.

(8 marks × 6 = 48 marks)



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MANIPAL UNIVERSITY

FIRST YEAR M.Sc. (RESPIRATORY THERAPY) DEGREE EXAMINATION – JUNE 2015

SUBJECT: ADVANCED RESPIRATORY THERAPY SCIENCE I
(SPECIALIZATION: ADULT CARDIO RESPIRATORY CARE AND NEONATAL & PAEDIATRIC RESPIRATORY CARE)
(NR - 2013 SCHEME)

Saturday, June 06, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

Long notes:

1. Elaborate in detail as to how to minimize the effect of PPV on the cardiovascular system.
(16 marks)
2. What are the physiological parameters for weaning a patient from mechanical ventilation? When do you begin the weaning process? What are the methods of weaning a patient from mechanical ventilation?
(16 marks)

Short notes:

- 3A. Airway management
- 3B. Sedative and analgesic agents
- 3C. Nutritional complications during mechanical ventilation
- 3D. Extubation
- 3E. PEEP and lung water
- 3F. Full and partial ventilatory support

(8 marks × 6 = 48 marks)



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MANIPAL UNIVERSITY

FIRST YEAR M.Sc. (RESPIRATORY THERAPY) DEGREE EXAMINATION – JUNE 2015

SUBJECT: ADVANCED RESPIRATORY THERAPY SCIENCE I
(SPECIALIZATION: ADULT CARDIO RESPIRATORY CARE AND NEONATAL & PAEDIATRIC RESPIRATORY CARE)
(NR - 2013 SCHEME)

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MANIPAL UNIVERSITY

FIRST YEAR M.Sc. (RESPIRATORY THERAPY) DEGREE EXAMINATION – JUNE 2015

SUBJECT: CRITICAL CARE MEDICINE – I
(SPECIALTY: ADULT CARDIO RESPIRATORY CARE)
(2013 SCHEME)

Tuesday, June 09, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

1. Discuss the pathophysiology of pneumonia. Add a note on ventilator associated pneumonia.
(8+8 = 16 marks)

2. Define Sepsis. Describe the ICU management of severe sepsis.
(8+8 = 16 marks)

3. **Write short notes on:**
 - 3A. Electrical Safety Injuries
 - 3B. Nutrition in critically ill
 - 3C. Aspiration Pneumonia
 - 3D. Hanging
 - 3E. Fat embolism
 - 3F. Massive Haemoptysis

(8 marks × 6 = 48 marks)



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MANIPAL UNIVERSITY

FIRST YEAR M.Sc. (RESPIRATORY THERAPY) DEGREE EXAMINATION – JUNE 2015

SUBJECT: CRITICAL CARE MEDICINE I
(SPECIALTY: NEONATAL AND PAEDIATRIC RESPIRATORY CARE)
(2013 SCHEME – NR)

Tuesday, June 09, 2015

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

1A. Discuss Ventilator associated Pneumonia. Add a note on care of ventilator circuits to Prevent Infection in the Neonates.

(8+8 = 16 marks)

1B. Discuss etiology, classification and Management of air leak syndrome.

(16 marks)

2. **Write short notes on following:**

2A. Bronchiectasis

2B. Tracheo esophageal fistula

2C. Respiratory distress score

2D. Postural drainage Therapy

2E. Respiratory care in children with neuromuscular disease

2F. Status Asthmaticus

(8 marks × 6 = 48 marks)

