

MANIPAL UNIVERSITY

**THIRD/FOURTH YEAR B.Sc. R.R.T. & D.T./B.Sc. C.V.T./B.Sc. M.R.T/B.Sc. R.T./
B.Sc. M.L.T./B.O.T./B.P.T. DEGREE EXAMINATION – JUNE 2015**

**SUBJECT: BIOSTATISTICS & RESEARCH METHODOLOGY/RESEARCH
METHODOLOGY & STATISTICS/BIOSTATISTICS/BASIC BIOSTATISTICS &
RESEARCH METHODOLOGY/RESEARCH METHODOLOGY AND BIOSTATISTICS**

Monday, June 01, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

☞ Answer ALL the questions.

1. Define statistics and list its role in health sciences. (5 marks)
2. Describe Validity and Reliability. (5 marks)
3. Give the difference between nominal and ordinal variables with examples. (5 marks)
4. Classify the following into different scales of measurements (Nominal, Ordinal, Interval and Ratio).
 - a) Temperature ($^{\circ}F$) b) City c) Age
 - d) Gender e) Stage of disease (I/II/III/IV)(5 marks)
5. Briefly describe Probability and Non Probability sampling. (5 marks)
- 6A. In a study of 126 patients admitted in a hospital, it was assessed whether patients were 'Current smoker', 'Past smoker' or 'Never smoker'. The frequencies of these categories are shown in table below. Represent the data with the help of a pie chart.

Smoking status	Frequency
Current smoker	42
Past smoker	21
Never smoker	63

- 6B. The data gives the intelligence quotient (I.Q) of 36 children. Construct frequency table along with relative frequencies using the class intervals, less than 90, 90 – 100, 100 – 110, and so on.

99	103	112	118	109	76	110	101	98	100	116	113
139	105	120	106	113	121	99	103	98	117	109	130
95	105	120	93	108	65	85	94	98	101	117	115

(5+5 = 10 marks)

- 7A. Why do we use coefficient of variation? How is it different from standard deviation? Explain with an example.

- 7B. Compute the median, range and inter-quartile range for the following data:
SBP (mmHg): 120 125 121 123 125 127 122 128 123 126 122
(5+5 = 10 marks)
8. It was observed that the incubation period in days of patients with infectious hepatitis follows normal distribution with a mean of 20 days and standard deviation of 4 days. What percentage of the patients have incubation period:
- 8A. Below 12 days
8B. Between 24 and 28 days
(5 marks)
9. What is Karl-Pearson's correlation coefficient? List its properties.
(5 marks)
10. Write a note on health information system and its requirements.
(5 marks)
- 11A. Explain the terms prevalence and incidence with examples.
11B. Define crude birth rate and infant mortality rate.
(6+4 = 10 marks)
12. Define epidemiology. Enumerate its uses. Describe case series analysis.
(10 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. Sc. M.L.T. DEGREE EXAMINATION – JUNE 2015****SUBJECT: CYTOLOGY AND CYTOGENETICS
(NEW REGULATION)**

Wednesday, June 03, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

✍ **Answer ALL questions.**

1A. Discuss about exfoliative and abrasive cytological sampling techniques. Add a note on alcohol fixatives.

(5+5+5 = 15 marks)

1B. Explain about cytology of menstrual cycle. Add a note on hormonal indices.

(10+5 = 15 marks)

2. **Write detailed notes on:**

2A. Liquid based cytology

2B. Numerical abnormalities of chromosomes

2C. Preservation of fluid specimen and methods of preparation slide

2D. MGG staining

2E. Ultra-fast Papanicolaou staining

2F. G-banding technique

2G. Cytology of menopause

(5 marks × 7 = 35 marks)

3. **Write short notes on:**

3A. Mailing of cytological specimen

3B. Secondary amenorrhea

3C. Heterochromatin

3D. Preparation of orange-G & EA solutions

3E. Method of RBC lysis

(3 marks × 5 = 15 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. Sc. M.L.T. DEGREE EXAMINATION – JUNE 2015****SUBJECT: GENERAL BACTERIOLOGY, IMMUNOLOGY AND SYSTEMIC BACTERIOLOGY
(NEW REGULATION)**

Friday, June 05, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

✍ Answer the following questions:

1. Discuss in detail cell mediated immune response.
(15 marks)
2. Discuss the pathogenicity and laboratory diagnosis of Mycobacterium tuberculosis.
(15 marks)
3. **Write short essays on the following:**
 - 3A. Dry heat sterilization
 - 3B. Anaerobic culture methods
 - 3C. Laboratory diagnosis of cholera
 - 3D. Precipitation reactions
 - 3E. Pathogenesis of diphtheria

(7 marks × 5 = 35 marks)
4. **Write short notes on:**
 - 4A. Fluorescent microscopy
 - 4B. Lepromin test
 - 4C. Louis Pasteur
 - 4D. Passive immunity
 - 4E. MRSA

(3 marks × 5 = 15 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. Sc. M.L.T. DEGREE EXAMINATION – JUNE 2015****SUBJECT: HISTOPATHOLOGICAL TECHNIQUES
(NEW REGULATION)**

Monday, June 08, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

✍ Answer ALL questions.

1A. Mention the source of Haematoxylin. Describe the preparation of Haematoxylin stain. Classify Haematoxyline based on mordant.

(2+6+7 = 15 marks)

1B. Classify microtome knives. Discuss the method of knife sharpening. Add a note on Abrasives and care of knives.

(4+7+2+2 = 15 marks)

2. **Write briefly on:**

2A. Picric acid containing fixatives

2B. Frozen sections

2C. Dehydration

2D. Masson's Trichrome staining

2E. Embedding media

2F. Congo red staining for amyloid

2G. Fite stain for Mycobacterium leprae

(5 marks × 7 = 35 marks)

3. **Write short notes on:**

3A. Heidenhain's susa

3B. Blueing process

3C. Apathy's mounting media

3D. Differentiation

3E. PAS staining

(3 marks × 5 = 15 marks)



MANIPAL UNIVERSITY**THIRD YEAR B. Sc. M.L.T. DEGREE EXAMINATION – JUNE 2015****SUBJECT: MYCOLOGY, VIROLOGY AND PARASITOLOGY
(NEW REGULATION)**

Wednesday, June 10, 2015

Time: 10:00-13:00 Hrs.

Max. Marks: 80

✍ **Answer ALL questions. Draw diagrams if necessary.**

1. Classify dermatophytes. Explain the laboratory diagnosis of dermatophytosis. (15 marks)

2. Classify protozoa. Discuss the pathogenesis and lab diagnosis of amoebic dysentery. (15 marks)

3. **Write detailed notes on the following:**

3A. General features of cestodes

3B. Herpes simplex virus

3C. Giardia lamblia

3D. Viral culture

3E. Antigenic variations in influenza virus

3F. Taenia solium

3G. General features of viruses

(5 marks × 7 = 35 marks)

4. **Write short notes on the following:**

4A. Varicella zoster virus

4B. Thick and thin blood films

4C. Hydatid cyst

4D. Rhinosporidiosis

4E. NIH swab

(3 marks × 5 = 15 marks)

