

MANIPAL ACADEMY OF HIGHER EDUCATION

**SECOND SEMESTER M.Sc. MEDICAL (ANATOMY, PHYSIOLOGY, BIOCHEMISTRY,
PHARMACOLOGY, MICROBIOLOGY) / M.Sc. FORENSIC SCIENCE DEGREE
EXAMINATION – SEPTEMBER 2021**

**SUBJECT: MCC 602 - COMMON CORE: INTRODUCTION TO RESEARCH
MFS 602 - COMMON CORE-2: RESEARCH METHODOLOGY**

Monday, September 13, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

✍ **Answer ALL the questions.**

✍ **Long answer questions:**

1. Explain in detail the components of the research article. (10 marks)

2A. What is the concept of Confidence Interval? Calculate the 95% confidence interval of the mean of a sample of size 10 with mean 20 and standard deviation 5.

2B. The weight of 200 students are normally distributed with mean 50 kg and standard deviation 5 kg. What percentage of students will have weight above 60 kg?
(Given: Cumulative area under Normal Curve $Z=2$ is 0.9772)

(10 marks)

3. **Short Answer Questions:**

3A. Find the Standard Deviation of the respiratory rate/ minute found to be 16, 18, 19, 17, 21, 24, 22, 23, 25, 28 in ten individuals.

3B. What is Probability sampling? Explain Systematic Sampling with its advantages and disadvantages.

3C. What is one-way ANOVA? Discuss its application with example.

3D. What is Experimental study design? Discuss role of Randomization in Experimental design.

3E. Assume a Population of 1000 people, of whom 300 have a disease and 700 do not have the disease. A screening Test is used to identify the 300 people with disease. Result of the screening Test is given below. Calculate Sensitivity, Specificity, PPV and NPV and comment on performance of screening Test.

Results of Screening	True Characteristic in the Population	
	Disease	No Disease
Positive	180	100
Negative	120	600
Total	300	700

3F. What is the role of informed consent in medical research?

(5 marks × 6 = 30 marks)



MANIPAL ACADEMY OF HIGHER EDUCATION
SECOND SEMESTER M.Sc. (MEDICAL MICROBIOLOGY) DEGREE
EXAMINATION – SEPTEMBER 2021

SUBJECT: SYSTEMATIC BACTERIOLOGY - 1 (MIC 604)

Tuesday, September 14, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

- ✍ Answer ALL questions. Write answer that are clear, relevant and legible.
- ✍ Illustrate your answers with neatly drawn and correctly labelled diagram wherever appropriate.

1. Classify Streptococci. Write about the suppurative infections caused by *Streptococcus pyogenes*.

(10 marks)

2. Explain the pathogenesis and laboratory diagnosis of pulmonary tuberculosis.

(10 marks)

3. Write short notes on:

- 3A. Methicillin resistant *Staphylococcus aureus*
- 3B. Cutaneous anthrax
- 3C. Elek's gel precipitation test
- 3D. Non gonococcal urethritis
- 3E. Laboratory diagnosis of *Streptococcus pneumoniae*
- 3F. Widal Test

(5 marks × 6 = 30 marks)



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MANIPAL ACADEMY OF HIGHER EDUCATION

SECOND SEMESTER M.Sc. (MEDICAL MICROBIOLOGY) DEGREE EXAMINATION – SEPTEMBER 2021

SUBJECT: SYSTEMATIC BACTERIOLOGY - 2 (MIC 606)

Wednesday, September 15, 2021

Time: 14:00 – 16:30 Hrs.

Maximum Marks: 50

1. Describe the pathogenesis and laboratory diagnosis of cholera. (5+5 = 10 marks)

2. Describe the pathogenesis and laboratory diagnosis of Syphilis. (4+6 = 10 marks)

3. **Write short notes on:**

3A. Laboratory diagnosis of Brucellosis

3B. Pathogenesis and laboratory diagnosis of *Haemophilus influenzae* type b

3C. Importance of *Acinetobacter spp.* in healthcare associated infections

3D. Lymphogranuloma venereum

3E. Actinomycosis

3F. Weil Felix reaction

(5 marks × 6 = 30 marks)

