Name:\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q1. Multiple Choice Questions (MCQ): (10 Marks)**

**1. Which staining characteristic is frequently observed in mycobacteria?**

a) Gram-negative staining

b) Acid-fast staining

c) Spore formation

d) Capsule formation

**2. What is the classic medium used for cultivating Mycobacterium tuberculosis?**

a) MacConkey agar

b) Blood agar

c) Löwenstein-Jensen medium

d) Chocolate agar

**3. What is the primary activator of macrophages in the TH1 immune response against Mycobacterium tuberculosis?**

a) Interferon alpha (IFN-α)

b) Interleukin 6 (IL-6)

c) Interleukin 12 (IL-12)

d) Tumor necrosis factor (TNF)

**4. Which of the following is a characteristic feature of primary tuberculosis?**

a) Reactivation of dormant bacteria

b) Caseous necrosis

c) Malnutrition-induced symptoms

d) Immunocompromised state

**5. How is tuberculosis diagnosed through the tuberculin skin test?**

a) Measurement of bacterial load in sputum

b) Detection of acid-fast bacilli in cerebrospinal fluid

c) Induration response to PPD injection

d) Culture of the organism from clinical specimens

**Q2. Illustration: (20 Marks)**

1. Illustrate and explain the two-stage battle within the macrophage during primary tuberculosis infection.

**Q3. Answer briefly: (10 Marks)**

1. Why is culture of Mycobacterium tuberculosis is not a practical method for initial identification?

2. What is the difference between granuloma and caseous necrosis?

**Q4. Fill in the Blanks: (10 Marks)**

1. The staining characteristic of \_\_\_\_\_\_\_\_\_\_ is frequently observed in mycobacteria.

2. Primary tuberculosis is characterized by the formation of \_\_\_\_\_\_\_\_\_\_, composed of lymphocytes, macrophages, and multinucleated giant cells.

3. The tuberculin skin test measures delayed-type hypersensitivity to an international reference called \_\_\_\_\_\_\_\_\_\_.

4. Primary tuberculosis is the initial infection in which inhaled tubercle bacilli are deposited in the\_\_\_\_\_\_\_\_\_\_.