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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (MICROBIOLOGY) DEGREE EXAMINATION – APRIL 2019**  
**SUBJECT: PAPER I: GENERAL MICROBIOLOGY AND IMMUNOLOGY**

Tuesday, April 02, 2019

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ **Answer ALL questions.**

✍ **Long Essays:**

1. Discuss bacterial conjugation in detail. Discuss the role of genetic transfer in antimicrobial resistance in bacteria. Add a note on detection of antibiotic resistance in bacteria in the laboratory.

(15 marks)

2. Discuss mechanism of Cell mediated immunity. Add a note on cytokines.

(15 marks)

3. **Write short notes on:**

3A. Disinfectants used in hospital.

3B. Cellular factors in Innate immunity.

3C. Role of Major Histocompatibility complex in transplantation.

3D. Restriction fragment length polymorphism: Principle and applications.

3E. Antibiotics acting on the Bacterial cell wall.

3F. Anaphylaxis.

3G. Fluorescent microscope: Clinical Applications.

3H. Heterophile antigen & clinical applications.

3I. ELISA.

3J. Cold sterilization.

(7 marks × 10 = 70 marks)



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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (MICROBIOLOGY) DEGREE EXAMINATION – APRIL 2019**  
**SUBJECT: PAPER II: BACTERIOLOGY AND MYCOLOGY**

Wednesday, April 03, 2019

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

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✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Discuss the etiology, pathogenesis and laboratory diagnosis of eumycotic mycetoma. (15 marks)

2. Describe the pathogenesis and laboratory diagnosis of Leptospirosis. (15 marks)

3. **Write short notes on:**

3A. Otomycosis

3B. Piedra

3C. Actinomycosis

3D. *Helicobacter pylori*

3E. Diarrheagenic *Escherichia coli*

3F. Mycotoxins

3G. *Bacteroides fragilis*

3H. *Moraxella catarrhalis*

3I. Mantoux test

3J. Drug resistance in *Staphylococcus aureus*

(7 marks × 10 = 70 marks)



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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (MICROBIOLOGY) DEGREE EXAMINATION – APRIL 2019**  
**SUBJECT: PAPER III: VIROLOGY AND PARASITOLOGY**

Thursday, April 04, 2019

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL questions.**

✍ **Long Essays:**

1. Enumerate the viruses causing hepatitis. Discuss the laboratory diagnosis and prophylaxis of hepatitis B.

(15 marks)

2. Describe the life cycle of Plasmodium vivax. Discuss in brief the pathogenesis and laboratory diagnosis of malaria.

(15 marks)

3. **Write short notes on:**

3A. Detection of viral growth in cell culture.

3B. Herpes zoster.

3C. Structure of Human Immunodeficiency Virus.

3D. Kyasanur Forest Disease.

3E. Etiology and laboratory diagnosis of aseptic meningitis.

3F. Adenoviral infections of the eye.

3G. Stool concentration methods for diagnosis of parasitic infections.

3H. Lung fluke.

3I. Structure of hydatid cyst.

3J. Congenital toxoplasmosis.

(7 marks × 10 = 70 marks)



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**MANIPAL ACADEMY OF HIGHER EDUCATION**  
**MD (MICROBIOLOGY) DEGREE EXAMINATION – APRIL 2019**  
**SUBJECT: PAPER IV: APPLIED MICROBIOLOGY & RECENT ADVANCES**

Friday, April 05, 2019

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Discuss in details about the collection and culture of blood sample. Discuss the recent advances in blood culture for rapid diagnosis.

(15 marks)

2. Discuss in details about universal screening for HIV, HBV and HCV in India.

(15 marks)

3. **Write short notes on:**

3A. Monoclonal antibody – preparation and usage in microbiological diagnosis.

3B. Precaution to control occupational hazard in microbiology laboratory.

3C. Comeback of measles.

3D. Line probe assay.

3E. Plasma sterilization.

3F. Resistant malaria.

3G. Antibiotic policy in hospitals.

3H. Management for carriers for MRSA.

3I. Cytopathogenic effects in viral diagnosis.

3J. NDM (New Delhi metalloβ-lactamases)

(7 marks × 10 = 70 marks)

