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## MANIPAL UNIVERSITY

MD (MICROBIOLOGY) DEGREE EXAMINATION – APRIL 2017

SUBJECT: PAPER I: GENERAL MICROBIOLOGY AND IMMUNOLOGY

Monday, April 03, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL questions.**

✍ **Long Essays:**

1. Categorize pathogens according to hazard and categories of containment. Discuss various types of biosafety cabinets.

(15 marks)

2. What is Flow cytometry? Give its principle and uses in clinical microbiology.

(15 marks)

3. **Write Short notes on:**

3A. Modifications of Gram staining

3B. Activation of T-cells

3C. Methods of detection of endotoxins

3D. Parameters affecting antimicrobial susceptibility testing

3E. Edible vaccines and their future

3F. What are the triggers for activating alternate complement pathway? Discuss the outcome of its activation.

3G. What is redox-potential and what are its implications in microbiology?

3H. Vapour phase disinfectants

3I. DNA probes

3J. Immunosurveillance

(7 marks × 10 = 70 marks)



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**MANIPAL UNIVERSITY**

**MD (MICROBIOLOGY) DEGREE EXAMINATION – APRIL 2017**

**SUBJECT: PAPER II: BACTERIOLOGY AND MYCOLOGY**

Tuesday, April 04, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL the questions.**

✍ **Long Essays:**

1. Describe the Serological diagnosis of Syphilis. (15 marks)

2. Enumerate the etiological agents of meningitis. Write in detail about the laboratory diagnosis of pyogenic meningitis. (15 marks)

3. **Write short notes on:**

- 3A. Non gonococcal urethritis
- 3B. Aspergillosis
- 3C. Bacterial vaginosis
- 3D. Keratomycosis
- 3E. Meliodosis
- 3F. Antibiotic associated colitis
- 3G. Mycobacterium avium-intracellulare complex
- 3H. Laboratory diagnosis of Dermatophytes
- 3I. Blastomycosis
- 3J. Sporotrichosis

(7 marks × 10 = 70 marks)



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## MANIPAL UNIVERSITY

MD (MICROBIOLOGY) DEGREE EXAMINATION – APRIL 2017

SUBJECT: PAPER III: VIROLOGY AND PARASITOLOGY

Wednesday, April 05, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ **Answer ALL questions.**

✍ **Long Essays:**

1. Describe the pathogenesis and laboratory diagnosis of Poliomyelitis. Add a note on Global Polio Eradication Initiative.

(15 marks)

2. Describe the diagnostic methods for investigating a case of anemia with parasitic etiology.

(15 marks)

3. **Write short notes on:**

3A. Robo Viruses

3B. Parvovirus B19

3C. SARS

3D. Post-exposure prophylaxis for HIV

3E. Immunological evasion of parasites

3F. Loasis

3G. Multilocular Echinococcosis

3H. Teratogenic viruses

3I. Cultivable parasites

3J. Subacute sclerosing pan encephalitis

(7 marks × 10 = 70 marks)



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**MANIPAL UNIVERSITY**

**MD (MICROBIOLOGY) DEGREE EXAMINATION – APRIL 2017**  
**SUBJECT: PAPER IV: APPLIED MICROBIOLOGY & RECENT ADVANCES**

Thursday, April 06, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

- ✍ **Answer ALL the questions.**
- ✍ **Draw diagrams wherever necessary.**

✍ **Long Essays:**

1. Describe the role of a microbiology laboratory in diagnosis and control of Health Care Associated Infection.

(15 marks)

2. Write briefly about the Biosafety measures in Microbiological Laboratory.

(15 marks)

3. **Write Short Notes on:**

- 3A. Biomedical waste management
- 3B. Biofilm and antibiotic resistance
- 3C. Childhood tuberculosis
- 3D. Recurrence of vivax malaria
- 3E. HIV-2
- 3F. Superantigens
- 3G. Real Time Quantitative PCR
- 3H. Antibiotic Resistance in Gram Positive cocci
- 3I. Serological tests in diagnosis of Parasitic infection
- 3J. Scrub typhus

(7 marks × 10 = 70 marks)

