

**MICROBIOLOGY**

**PAPER- I**

**Time : 3 hours**

**MICRO/D/11/18/I**

**Max. Marks : 100**

**Attempt all questions in order.**

**Each question carries 10 marks.**

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|-----|----|---|-----|
| 1.  | a. | Enumerate the causative agents of non-gonococcal urethritis.  | 3   |
|     | b. | What clinical specimens are collected?  | 1   |
|     | c. | Discuss the laboratory diagnosis of non-gonococcal urethritis.  | 6   |
| 2.  | a. | Write briefly about the infections caused by Legionella pneumophila.  | 3   |
|     | b. | Enumerate the determinants of its pathogenicity.  | 2   |
|     | c. | Describe about its laboratory diagnosis in brief.   | 5   |
| 3.  | a. | Compare the new methods of detecting mycobacterial species in clinical specimens.                                       | 6   |
|     | b. | Describe the clinical significance of non-tuberculous mycobacteria.   | 4   |
| 4.  | a. | Describe the pathogenesis of diarrhoeagenic Escherichia coli strains.   | 5   |
|     | b. | Describe laboratory diagnosis of these Escherichia coli strains.  | 5   |
| 5.  |    | Write about the pathogenesis and laboratory diagnosis of Clostridium difficile infection.                               | 5+5 |
| 6.  | a. | Write differences between Actinomycetoma and Eumycetoma.  | 2   |
|     | b. | Enumerate the causative agents of Eumycetoma  | 4   |
|     | c. | Write briefly about the laboratory diagnosis of Eumycetoma.   | 4   |
| 7.  | a. | Briefly discuss Phaeohyphomycosis.  | 4   |
|     | b. | Discuss its clinical manifestations.  | 2   |
|     | c. | Discuss its laboratory diagnosis.   | 4   |
| 8.  |    | Write briefly on Aspergillosis under following headings:  |     |
|     | a. | Its causative agents  | 3   |
|     | b. | Its clinical forms  | 4   |
|     | c. | Laboratory diagnosis  | 3   |
| 9.  |    | Discuss briefly Pneumocystis under following headings:  |     |
|     | a. | Its clinical manifestations   | 3   |
|     | b. | Life cycle of P. jirovecii  | 4   |
|     | c. | Laboratory diagnosis of Pneumocystis  | 3   |
| 10. |    | Enumerate the agents and vectors of Rickettsial diseases. Briefly describe their epidemiology and laboratory diagnosis. | 5+5 |

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PAPER- II

Time : 3 hours  
Max. Marks : 100

MICRO/D/11/18/II

Attempt all questions in order.  
Each question carries 10 marks.

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|-----|---|----|
| 1.  | a. Classify trematodes on the basis of their habitat.                                       | 4  |
|     | b. Give general features of blood flukes.   | 6  |
| 2.  | a. Enumerate intestinal acid fast protozoa.   | 2  |
|     | b. Give laboratory diagnosis of Cryptosporidiosis.  | 8  |
| 3.  | a. List the sporozoa that cause human infection.  | 1  |
|     | b. Write about host immunity and prophylaxis of malaria.                                    | 5  |
|     | c. List the laboratory tests used for diagnosis of cerebral malaria.                        | 4  |
| 4.  | a. List the agents causing primary amoebic meningoencephalitis.                             | 2  |
|     | b. Write about its transmission and pathogenicity.  | 4  |
|     | c. Discuss its laboratory diagnosis.  | 4  |
| 5.  | a. Classify nematodes on the basis of habitat.  | 3  |
|     | b. Discuss life cycle, pathogenicity and laboratory diagnosis of Strongyloides stercoralis. | 7  |
| 6.  | a. Define prions.   | 2  |
|     | b. Enumerate diseases produced by prions.   | 3  |
|     | c. Give characteristics of prion diseases.  | 5  |
| 7.  | Enumerate the various immunological abnormalities seen in HIV infections.                   | 10 |
| 8.  | a. Briefly discuss properties and pathogenesis of Delta agents.                             | 7  |
|     | b. Outline its laboratory diagnosis in brief.   | 3  |
| 9.  | a. Define arboviruses.  | 1  |
|     | b. Enumerate arboviruses prevalent in India.  | 4  |
|     | c. Briefly write on arboviruses transmitted by Culex mosquitoes in India.                   | 5  |
| 10. | a. Outline the pathogenesis of Polio viruses.   | 3  |
|     | b. Differentiate vaccine strain from wild strain.   | 3  |
|     | c. Briefly write on C and D antigens.   | 4  |

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MICROBIOLOGY

PAPER- III

Time : 3 hours  
Max. Marks : 100

MICRO/D/11/18/III

Attempt all questions in order.  
Each question carries 10 marks.

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|-----|---|-----|
| 1.  | a. Enumerate the causes of chronic meningitis in India.   | 2   |
|     | b. Write about its laboratory diagnosis, including the recent advances.                           | 8   |
| 2.  | a. Enumerate the common causes of bacterial food poisoning.                                       | 4   |
|     | b. Write about pathogenesis and laboratory diagnosis of food poisoning.                           | 6   |
| 3.  | a. What is "atypical" pneumonia?  | 1   |
|     | b. List its common causes.  | 3   |
|     | c. Describe the approach to its laboratory diagnosis.   | 6   |
| 4.  | a. List water borne pathogens.  | 4   |
|     | b. Write about various methods for bacteriological examination of water.                          | 6   |
| 5.  | Describe the prevention and control of influenza virus in humans.                                 | 10  |
| 6.  | a. What is pulse polio immunization?  | 3   |
|     | b. Comment on reasons of non-eradication of poliomyelitis.  | 3   |
|     | c. Discuss strategies to overcome it.   | 4   |
| 7.  | a. Write about importance of hand washing in hospital practice.                                   | 2.5 |
|     | b. When should a health care worker decontaminate hands?  | 5   |
|     | c. Describe the steps of hand hygiene.  | 2.5 |
| 8.  | a. List various immuno-enzymatic reactions.   | 3   |
|     | b. Describe them with suitable examples of applications.  | 7   |
| 9.  | a. List the hospital strains of staphylococcus.   | 3   |
|     | b. Describe their role in hospital infection.   | 7   |
| 10. | a. Define MIC.  | 1   |
|     | b. What are MIC 50 and MIC 90?  | 2   |
|     | c. Describe different methods of MIC determination along with their advantages and disadvantages. | 7   |

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**MICROBIOLOGY**  
**PAPER- IV**

**Time : 3 hours**  
**Max. Marks : 100**

**MICRO/11/18/IV**

**Attempt all questions in order.**  
**Each question carries 10 marks.**

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|-----|---|----|
| 1.  | a. What is flexible genetic pool in microbes?   | 4  |
|     | b. Describe their significance and applications.  | 6  |
| 2.  | a. Define immunological tolerance and autoimmunity.   | 2  |
|     | b. Discuss establishment and maintenance of tolerance.  | 4  |
|     | c. Enumerate proposed mechanisms for induction of autoimmunity.   | 4  |
| 3.  | a. What are hypersensitivity reactions? Classify them.  | 3  |
|     | b. Tabulate the cells involved, mechanism of hypersensitivity and give examples of each type.                   | 7  |
| 4.  | a. Enumerate the different types of microscopes used in Microbiology.   | 3  |
|     | b. Write their principles.  | 4  |
|     | c. Discuss electron microscope in detail.   | 3  |
| 5.  | Discuss Quality Assurance in Microbiology laboratory.   | 10 |
| 6.  | a. Enumerate the different laboratory acquired infections in Microbiology.                                      | 2  |
|     | b. Discuss routes of infection.   | 2  |
|     | c. Discuss organization of Biosafety levels.  | 6  |
| 7.  | a. Define immuno-diffusion. Write about its advantages  | 3  |
|     | b. Enumerate various types of immuno-diffusion; give the principle of each with one example of its application. | 7  |
| 8.  | a. Discuss briefly bacterial metabolism.  | 4  |
|     | b. Briefly write on :-  | 6  |
|     | (i) Oxidation   |    |
|     | (ii) Fermentation   |    |
|     | iii) Redox potential  |    |
| 9.  | a. Define mutation.   | 1  |
|     | b. Discuss briefly different types of mutation.   | 4  |
|     | c. How would you demonstrate mutations?   | 5  |
| 10. | Discuss the role of normal microbial flora in health and disease.   | 10 |

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