

DETAILED SYLLABUS FOR THE POST OF ASSISTANT PROFESSOR IN MICROBIOLOGY IN MEDICAL EDUCATION

(Cat.No. : 091/2025,121/2025)

(Total Marks - 100)

General Microbiology

- _ History of Microbiology
- _ Microscopy
- _ Bio-safety including universal precautions
- _ Physical and biological containment
- _ Sterilization and disinfection
- _ Morphology of bacteria and other microorganisms
- _ Nomenclature and classification of microorganisms
- _ Normal flora of human body
- _ Growth & nutrition of bacteria
- _ Bacterial metabolism
- _ Bacterial toxins
- _ Bacteriocins
- _ Microbiology of hospital environment
- _ Microbiology of air, milk and water
- _ Host-parasite relations
- _ Antibacterial substances and drug resistance
- _ Bacterial genetics & bacteriophages
- _ Molecular genetics relevant for medical microbiology
- _ Quality assurance & quality control in microbiology
- _ Accreditation of laboratories

Immunology

- _ Components of the immune system
- _ Innate and acquired immunity
- _ Cells involved in immune response
- _ Antigens
- _ Immunoglobulins
- _ Mucosal immunity
- _ Complement
- _ Antigen & antibody reactions
- _ Hypersensitivity
- _ Humoral & Cell mediated immunity
- _ Cytokines
- _ Immunodeficiency
- _ Auto-immunity
- _ Immune tolerance
- _ MHC complex

- _ Transplantation immunity
- _ Tumor immunity
- _ Vaccines and immunotherapy
- _ Measurement of immunological parameters
- _ Immunological techniques
- _ Immunopotential & immunomodulation

Systematic bacteriology

- _ Isolation & identification of bacteria
- _ Gram positive cocci of medical importance
- _ Gram negative cocci of medical importance
- _ Gram negative and positive bacilli of medical importance,
- _ Anaerobic bacteria of medical importance
- _ Mycobacteria
- _ Spirochaetes
- _ *Chlamydiae*
- _ Mycoplasmales: *Mycoplasma*, *Ureaplasma*, *Acholeplasma* and other Mycoplasmas.
- _ Rickettsiae, Coxiella, Bartonella

Virology

- _ General properties of viruses
- _ Classification of viruses
- _ Morphology: Virus structure
- _ Virus replication
- _ Isolation & identification of viruses
- _ Pathogenesis of viral infections
- _ Genetics of viruses
- _ DNA viruses of medical importance including Poxviridae, Herpesviridae, Adenoviridae, Hepadna virus, Papova and Parvo viruses etc.
- _ RNA viruses of medical importance including Enteroviruses, Togaviridae, Arboviruses, Orthomyxoviruses, Paramyxoviruses, Reoviridae, Rhabdoviridae, Arenaviridae, Bunyaviridae, Retroviridae, Filoviruses, Human immunodeficiency virus, Arboviruses, Coronaviridae, Caliciviruses etc.
- _ Slow viruses including prions
- _ Unclassified viruses
- _ Hepatitis
- _ Virioids
- _ Viral vaccines & anti-viral drugs

Parasitology

- _ General characters & classification of parasites
- _ Methods of identification of parasites in the laboratory.
- _ Protozoan parasites of medical importance
- _ Helminthology of medical importance
- _ *Entomology*: common arthropods & other vectors
- _ Antiparasitic agents.

Mycology

- _ General characteristics, classification and morphology of fungi
- _ Morphology & reproduction of fungi
- _ Isolation & identification of fungi
- _ Tissue reactions to fungi
- _ Yeasts, yeast like fungi and filamentous fungi of medical importance
- _ Common laboratory contaminant fungi
- _ Mycetism & mycotoxicosis
- _ Antifungal agents & invitro antifungal susceptibility tests.

Applied Microbiology

- _ Epidemiology of infectious diseases
- _ Hospital acquired infections
- _ Management of hospital waste
- _ Investigation of an infectious outbreak
- _ Infections of various organs and systems of human body and their lab diagnosis viz. respiratory tract infections, urinary tract infections, central nervous system infections, congenital infections, reproductive tract infections, gastrointestinal infections, hepatitis, pyrexia of unknown origin, infections of eye, ear& nose, skin & wound infections septicemia, endocarditis, haemorrhagic fever etc.
- _ Opportunistic infections.
- _ Sexually transmitted diseases
- _ Vaccinology: principle, methods of preparation, administration of vaccines
- _ Molecular techniques as applicable to microbiology
- _ Epidemiological typing techniques
- _ Automation in Microbiology
- _ Statistical analysis of microbiological data and research methodology
- _ Animal & human ethics involved in microbiological work
- _ Infection Control

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.