Syllabus For Ph.D. In Microbiology

General Bacteriology & Immunology

General Bacteriology

1. History of Microbiology
2. Microscopy
3. Biosafety including universal containment
4. Physical and biological containment
5. Sterilization and disinfection
6. Morphology of bacteria and other microorganisms
7. Normal flora of human body
8. Bacterial metabolism
9. Bacterial toxins
10. Microbiology of hospital environment
11. Antibacterial substances and drug resistance
12. Nomenclature and classification of microorganisms
13. Normal flora of human body
14. Growth & nutrition of bacteria
15. Bacterial metabolism
16. Bacterial toxins
17. Bacteriocins
18. Microbiology of hospital environment
19. Host parasite relationship
20. Nosocomial infection

Immunology

1. Components of immune system
2. Innate and acquired immunity
3. Cells & organs involved in immune response
4. Antigens
5. Immunoglobulins
6. Antigen & antibody reactions
7. Cell mediated immunity
8. Complement is health disease
9. Hypersensitivity
10. Cytokines
11. Immunodeficiency
12. Vaccines and immunotherapy
13. Immunological techniques

Systemic Bacteriology

1. Isolation & identification of bacteria
2. Gram positive cocci of medical importance including Staphylococcus cocci etc.
3. Gram negative cocci of medical importance including Neisseria, Branhamella, Moraxella etc.
4. Gram positive bacilli of medical importance including Lactobacillus, Coryneform organisms, Bacillus & aerobic bacilli, other actionomycetales, Erysipelotherix, Listeria, Clostridium and other spore bearing anaerobic bacilli etc.
5. Gram negative bacilli of medical importance including Vibrios, Aeromonas, Plesiomonas, Haemophilus, Bordetella, Brucella, Gardnerella, Pseudomonas & other non- fermenters, Pasturella, Francisella, Bacteriodes, anaerobic gram negative bacilli etc.
6. Enterobacteriaceae
7. Helicobacter, Camphylobacter & Spirillium
8. Mycobacteria
9. Spirochaetes
10. Chyamydiae
11. Mycoplasmatales; Mycoplasma, Ureaplasma, Acholeplasma and other Mycoplasma
12. Rickettsiae, Coxiella, Bartonella etc.
13. Actinomycetes & Nocardia

Mycology, Virology & Parasitology

Mycology

1. General characteristics & classification of fungi
2. Morphology & reproduction of fungi
3. Isolation and identification of fungi
4. Tissue reactions to fungi
5. Yeasts and ueast like fungi of medical importance including Candida, Cryptococcus, Malassezia, Trichosporon, Geotrichum, Saccharomyccs etc.
6. Mycelia fungi of medical importance including Aspergillus, Zygomycetes, Pseudoallescheria, Fusarium, Piedra, other dematiaceous hyphomucetes and other hyalohyphomycetes etc.
7. Dimorphic fungi including Histoplasma, Blastomyces, Coccidioides, Paracoccidiodes, Sporothrix, Penicillium marneffei etc.
8. Dermatophytes
9. Common laboratory contaminant fungi

Virology

1. General properties of viruses
2. Classification of viruses
3. Morphology : Virus structure
4. Virus replication
5. Isolation & identification of viruses
6. DNA viruses of medical importance including Poxviridae, Herpesviridae, Adenoviridiae, Hepadna virus
7. RNA viruses of medical importance including Enteroviruses, human immunodeficiency virus, Arboviruses, Coronaviridae, Calci viruses, oncogenic viruses etc.

Parasitology

1. General characters & classification of parasites
2. Methods of identification of parasites
3. Protozoan parasites of medical importance including Entamoeba, Free living amoebae, Giardia, Trichomonas, Leishmania, Trypanosoma, Plasmodium, Toxoplasma, Sarcocustis, Cryptosporidium, Microsporidium,
4. Helminthology of medical importance including those belonging to cestodes (Diphyllobothrium, Taenia, Echinococcus, Hymenolepis, Dipylidium, Multiceps etc.) Trematodes (Schistosomes, Fasciola, Fasciolopsis, Gastrodiscoides, Paragonimus, Clonorchis, Opisthorchis etc) and Nematodes (Trichuris, Trichinella, Strongyloides, Ancylostoma, Necator, Ascaris, Toxocara, Enteropbius, Filarial worms, Dracunculus etc)

Clinical Microbiology & Recent advances

1. Epidemiology & infectious diseases
2. Hospital acquired infections
3. Management of hospital waste
4. Investigation of an infectious outbreak
5. Infections of various organs and systems of human body
6. Respiratory tract infections
7. Bio safety precautions in Microbiology
8. Urinary tract infections.
9. Central nervous system infections
10. Congenital infections
11. Reproductive tract infection
12. Gastrointestinal infection
13. Hepatitis infections
14. Pyrexia of unknown origin
15. Infections of eye, ear & nose
16. Endocarditis infection
17. Haemorrhagic fever etc.
18. Opportunistic infections
19. Sexually transmitted diseases
20. Vaccines (Newer)
21. Automation in Microbiology
22. Statistical analysis of microbiological data and research methodology.
23. Monocular techniques in Microbiology
24. Quality control in Microbiology
25. Quality Assurance in Microbiology
26. Quantitative techniques in Microbiology
27. Immunological diagnosis of infectious diseases
28. Virological diagnosis of (Swine flu etc.) out breaks viral infectious
29. Lab diagnosis of protozoal infections (Malaria)
30. Lab diagnosis of Helminthic infections (Filaria)
31. Lab diagnosis of superficial fungal infections
32. Lab diagnosis of Deep fungal infectious
33. Emerging & Reemerging infections disease.