Syllabus for PhD entrance Examination: Medical Microbiology

General Microbiology

1. Historical introduction to Microbiology
2. Classification & morphology of bacteria, viruses and fungi
3. Physiology of bacteria including growth requirements & metabolism
4. Sterilization
5. Disinfectants
6. Types of microscopes ,micrometry and microscopy
7. Bacterial genetics and drug resistance to antimicrobial agents.
8. Host parasite relationship and bacterial infections
9. Antimicrobial agents – mode of action, MIC, MBC detection and disc diffusion techniques
10. Bacterial genetics & nucleic acid amplification technologies
11. Laboratory waste management
12. Definition of waste, classification, segregation, transport and disposal.

Immunology

1. Introduction, Definition of immunity, types of immunity, factors responsible, mechanism of innate Immunity, active and passive immunity, local immunity.
2. Antigen:
3. Antibodies
4. Serological Reactions :
5. Immune system
6. Immune response
7. Complement, Hypersensitivity, Autoimmunity
8. Autoimmunity -Definition, mechanism, classification, pathogenesis.
9. Transplantation & tumor immunology, Immunodeficiency diseases
10. Preventive inoculations, immunomodulation and immunotherapy

Systemic Bacteriology

1. Isolation, description and identification of bacteria. The epidemiology, pathogenesis, antigenic characteristics and laboratory diagnosis of disease caused by them
2. Staphylococcus and Micrococcus; Anaerobic Gram positive cocci.
3. Streptococcus and Lactobacillus.
4. Neisseria
5. Corynebacterium and other coryneform organisms.
6. Bacillus: the aerobic spore-bearing bacilli.
7. Clostridium: the spore-bearing anaerobic bacilli.
8. Non-sporing anaerobes
9. The Enterobacteriaceae.
10. Vibrios, Aeromonas, Plasiomonas, Campylobacter and Spirillum, H.pylori
11. Erysipelothrix and Listeria
12. Pseudomonas.
13. Chromobacterium, Flavobacterium, Acinetobacter and Alkaligens.
14. Pasteurella, Francisella.
15. Haemophilus and Bordetella.
16. Brucella.
17. Mycobacteria.
18. The spirochaetes.
19. Actinomyces, Nocardia and Actinobacillus.
20. Mycoplasmatales:
21. Rickettsiae.
22. Chlamydiae.

Mycology

1. General characteristics & classification of fungi
2. Laboratory diagnosis of fungi
3. Dermatophytes.
4. True yeast, yeast like fungi, mould and dimorphic fungi of medical importance
5. Pneucocystis carinii infection
6. Mycetismus & mycotoxicosis
7. Fungi causing superficial mycoses
8. Fungi causing subcutaneous mycoses
9. Fungi causing systemic infections

Virology

1. General properties, morphology and classification of viruses
2. Laboratory diagnosis of viral diseases
3. DNA viruses of medical importance
4. RNA viruses of medical importance
5. Bacteriophage
6. Immunoprophylaxis & anti-viral drugs
7. The nature of viruses
8. Virus replication
9. Bacteriophages
10. Pox viruses
11. Herpes viruses
12. Rubella virus
13. Arbo viruses
14. Influenza virus
15. Respiratory disease: Rhinoviruses, adenoviruses, corona viruses
16. Paramyxoviridae
17. Enteroviruses : Polio, Echo, Coxsackie viruses
18. Hepatitis viruses
19. Rabies virus
20. Slow viruses
21. Human immunodeficiency viruses
22. Oncogenic viruses
23. Teratogenic viruses
24. Viruses of gastroenteritis
25. Prion diseases

Parasitology

1. General characters & classification of Parasites.
2. Laboratory diagnosis of parasitic diseases
3. Host – parasite relationship
4. Parasites found in various organs (final abode) and larva migrans
5. Protozoans of medical importance
6. Cestodes of medical importance
7. Trematodes of medical importance
8. Nematodes of medical importance
9. Ectoparasites of human body and disease transmitted by them
10. Rhinosporidium seeberi