Item 13: To approve syllabus of Microbiology and Pharmacology for PhD CET from admission batch 2021 onwards

Syllabus of Medical Microbiology for PhD CET

Mahatma Gandhi Mission's College.

–Navi Mumbai

DEPARTMENT OF MICROBIOLOGY

Medical Microbiology Syllabus for PhD Entrance

General Microbiology and Immunology

Contains	**Topics**
Details of General Microbiology	Historical aspects,Classification of living beings, Microscopy
	Study of bacteria, Structure and composition of bacterial cell, Growth and multiplication of bacteria ,
	Sterilization& Disinfection,
	Culture media & Culture methods, Biochemical reactions,
	Antibiotic sensitivity test, Antimicrobial Agents&Minimisation of drug resistance
	Universal safety precautions & Hospital waste Management
	Hospital acquired infections. Infection control committee
	Bacterial genetics , Genetic engineering and Molecular techniques
Details of Immunology and Serology.	Infection, Immunity, Vaccines and immunization schedule
	Antigen, Antibodies, Complement
	Serological reactions –Precipitation, Agglutination, CFT, Opsonisation, neutralisation, IFA, RIA, ELISA
	Structure and functions of immune system
	Hypersensitivity
	Autoimmunity
	Transplantation immunity, Tumour immunity

Systemic Bacteriology

Contains	**Topics**
Gram Positive Organisms	Staphylococcus

	Streptococcus, Pneumococcus
	Corynebacterium, Bacillus
Anaerobes and Mycobacteria	Clostridium- Perfringens, Tetani, Botulinum, Difficile
	Non sporing anaerobes
	Mycobacterium tuberculosis
	M. leprae, Atypical mycobacteria
Gram Negative Organisms	Gonococcus, Meningococcus
	E.Coli, Klebsiella, Proteus
	Salmonella, Shigella,
	Vibrio
	Pseudomonas ,Burkholderia, Stenotrophomonas, Pasteurella, Yersinia
	Haemophilus, Bordetella and Brucella
Spirochetes & Miscellaneous	Spirochaetes. T. Pallidum, Leptospira, Borrelia
	Rickettsiae, Chlamydiae,Campylobacter, Helicobacter
	Actinomycetes and Nocardia
	Mycoplasma , legionella, Listeria
	Miscellaneous Bacteria

Virology, Mycology & Parasitology

Contains	Topics
Details of Virology	General Properties of viruses
	Outline of diagnosis of viral diseases, Virus host interactions
	Bacteriophage, Pox viruses.
	Herpes viruses, Adeno viruses
	Picorna viruses, Orthomyxoviruses
	Paramyxoviruses, Corona virus (all details about Pandemic 2019)
	Arboviruses, Rhabdoviruses
	Hepatitis viruses
	Human immunodeficiency virus and AIDS
	Oncogenic viruses
Details of Mycology	Historical aspects
	Classification of fungal diseases
	Fungi causing superficial infection
	Fungi causing subcutaneous mycoses
	Fungi causing systemic infection
	Fungi causing opportunistic infection
Details of Protozoology	E. histolytica and other amoebae
	Giardia, Trichomonas,
	Leishmaniadonovani and Trypanosomes
	Malarial Parasites , Babesia
	Toxoplasma gondii ,Sarcocystis
Details of Helminthology	Introduction, General characters, classification
	Nematodes
	Cestodes
	Trematodes
	System wise Parasitic Infections.
	Parasitic Diseases In Aids
	Diagnostic Procedures Concentration Techniques.

Applied Microbiology & Molecular Biology

Contains	Topics
Quality management & Quality Control in Microbiology	Total Quality Management including Quality Assurance & Quality Control, SOP writing
	Accreditation of Medical laboratory
	Laboratory Safety, Biomedical waste disposal
Molecular Biology and recent advances in Diagnostic Microbiology	
Applied Microbiology, Epidemiological markers, Biological Warfare, Zoonotic diseases	
Causative agents and Lab Diagnosis of various common clinical conditions- UTI, URTI, LRTI, Blood stream infections, IE, PUO, Diarrhea, dysentery, gastroenteritis, meningitis	
Bacteriology of food, water and Air	
Vehicles and vectors in Medical microbiology	

Syllabus of Medical Pharmacology for PhD CET

S.No.	Theory Topics
1.	**General Pharmacology:** Introduction to Pharmacology**,** Sources of Drugs, Routes of Drug Administration, Pharmacokinetics, Pharmacodynamics, Factors Modifying Drug action and Adverse drug reactions.
2.	**Autonomic Nervous System:** General Consideration, Adrenergic agonist, Adrenergic antagonists, Cholinergic agonists, Anticholinesterases drugs, Anticholinergic drugs, Skeletal muscle relaxants.
3.	**Cardiovascular System:** Antihypertensive Agents, Diuretics and Anti-diuretics, Antianginal Agents, Coagulants & Anticoagulants, Thrombolytics & Antiplatelet agents, Drugs for congestive cardiac failure, Management of shock, Hypolipidemic agents and Hematinic.
4.	**Gastrointestinal System:** Emetics and Antiemetics, Drugs for peptic ulcer, Anti-diarrheal agents and Laxative & purgatives.
5.	**Respiratory System:** Treatment of Cough, Drugs for Bronchial asthma.
6.	**Drugs affecting Central Nervous system (CNS) :**Introduction to CNS, Sedative and Hypnotics, Local Anesthetics, General Anesthetics, Antiepileptics, Antidepressants, Antipsychotics, NSAIDS, Opioids and Antiparkinsonian agents.
7.	**Hormones and Antagonists:** Introduction to Endocrinology, Glucocorticoids, Insulin, Oral hypoglycemic agents, Thyroxine& Antithyroid drugs, Estrogens and Antagonists, Progestins and Antagonists, Oral Contraceptives, Testosterone and Anabolic steroids.
8.	**Chemotherapeutic agents:** General consideration, Sulphonamides and Cotrimoxazole,Fluroquinolones, Penicillins, Cephalosporins and Other beta lactam antibiotics, Aminoglycosides, Macrolides, Tetracyclines and Chloramphenicol, Antitubercular drugs, Antileprotic agents, Antimalarial agents, Anti-amoebic agents, Anti-helminthics, Antifungal agents, Antiviral agents and Cancer Chemotherapy.
9.	**Miscellaneous topics:** Chelating agents, Drug-drug interaction, Drugs used at extreme of age, in pregnancy & organ dysfunction, Dermato-pharmacology, Ocular pharmacology, Pharmacoeconomics, Pharmacogenetics, Drugs and Gout and Rheumatoid Arthritis, Drug development Process, Pre-Clinical studies, Pharmacovigilance (ADR reporting)

10.	**Animal experiments**: Ethical considerations, ethical approval, applicable regulatory Guidelines (CPCSEA), humane animal research (principles of 3Rs) and alternatives to animal experimentation. General and statistical considerations
11.	**General screening and evaluation of:** Analgesics, antipyretics, anticonvulsants, anti-inflammatory drugs, antidepressants, antianxiety and antipsychotics, sedatives, muscle relaxants, antihypertensives, hypocholesterolaemic agents, antiarrhythmics, diuretics, adrenergic blocking drugs
12.	**Biochemical Pharmacology:** Basic principles and applications of simple analytical methods, Principles of quantitative estimation of drugs, endogenous compounds and poisons using Colorimetry, Spectrophotometry, flame photometry, High Performance Liquid Chromatography (HPLC) and enzyme-linked immunosorbent assay (ELISA).

Reference Books:

1. K.D. Tripathi, Essentials of Medical Pharmacology, Japyee Brothers
2. Goodman & Gilman's The Pharmacological Basis of Therapeutics, ed. Laurence Brunton, Bruce A. Chabner, Bjorn Knollman.
3. R.S. Satosakar, A.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics
4. H.L. Sharma and K.L. Sharma, Principles of Pharmacology, Paras Medical Publisher, Hyderabad, New Delhi
5. Drug Discovery and Evaluation: Pharmacological Assays Editors: Vogel, Hans Clinical Pharmacology by Laurence, Bennett and Brown