

SECOND PROFESSIONAL MBBS

1. *FORENSIC MEDICINE

Distribution of marks and syllabus

THEORY:

Paper	Syllabus/ Topics	No. of Questions
Paper I	Introduction & legal procedures Medical jurisprudence law & medicine Legal and ethical aspects of medical Practice/medical profession death & its medico-legal aspects, medicolegal Autopsy, exhumation Death from asphyxia Thermal deaths, deaths due to electricity & lightening injuries, medico-legal Considerations & types.	Total six questions (Three in each part) each part may have one long question & other as short notes
Part -II	Sexual offences & sexual perversions Pregnancy & delivery, abortion, infanticide Potency, legitimacy, fraternity, virginity, Defloration Forensic psychiatry Forensic toxicology	

FORENSIC MEDICINE

AIMS & OBJECTIVES:-

1. Identify the basic medico legal aspects of hospital and general practice.
2. Define the medico legal responsibilities of a general physician while rendering Community service either in a rural primary health centre or an urban health centre.
3. Diagnose, manage and identify legal aspects of common acute and chronic poisoning.
4. Make observations and logical inferences on order to initiate enquire in criminal matters and medico legal problems.
5. Make observations and interpret findings at postmortem examination.
6. Observe the principles of medical ethics in the practice of his profession.

1. Introduction and Legal Procedures

Explanation of the terms: Forensic Medicine, Medical Jurisprudence, State Medicine, Legal Medicine, Forensic Pathology, with the importance of each. Legal procedure at an Inquest. Types of Inquest i.e. Police Inquest, Magistrate's Inquest, Coroner's Inquest. Criminal courts in India and their powers. Procedures in the court: (Summons, Oath, Recording of evidence). Medical Evidence (Documentary i.e. Medical certificates, Medico-legal Reports/Postmortems Reports, Dying declaration/ Dying Deposition and Oral evidence i.e. Appearance of a doctor in the court) Types of witnesses: common and expert witness.

2. Medical Jurisprudence (Legal and ethical aspects of medical practice)

Distinguishing Ethics and Etiquettes, Hippocratic Oath and latest recommendations about its modification. Medical Councils (Indian Medical Council and State Medical Council) with their constitution and functions, disciplinary, control, penal erasure. Privileges of a Registered Medical Practitioner, Infamous Conduct, Dichotomy, Professional Secrets, Privileged Communication, Professional Negligence (Civil and Criminal), Vicarious Liability, Doctrine of Res Ipsa Loquitur, Contributory Negligence, Duties of a medical practitioner towards his patients and society and the State. Consent, Consumer's Protection Act, Constitution of various fora, their powers, purpose of the procedure for lodging complaints.

3. Death and its medico legal aspects

Definition of death, Somatic and Molecular deaths, Brain Death, modes of death, Suspended Animation, signs of death (i.e. cessation of vital functions, changes in the eye, cooling of the dead body, postmortem staining, changes in the muscles i.e. primary flaccidity, rigor mortis, secondary flaccidity, cadaveric spasm, heat stiffening, cold stiffening) Decomposition/ Putrefaction: Define external signs of decomposition like colour changes, development of foul smelling gases and the pressure – effects, internal signs of decomposition in the form of changes in the various organs circumstances modifying putrefaction, appearance of maggots and their significance, adipocere formation, mummification. Presumptions of death and survivorship.

4. Death from Asphyxia

Definition and signs of asphyxia and classification of asphyxia death.

- (a) Hanging: Complete /Partial hanging, typical /atypical hanging, cause of death in hanging fatal period, external and internal postmortem findings and medico legal aspects of hanging.
- (b) Strangulation: Definition, types i.e. strangulation by ligature, throttling or manual. Strangulation, strangulation by means other than a ligature material or by hand, garroting mugging, cause of death, fatal period, external and internal postmortem findings, medico legal aspects.
Difference between hanging and strangulation.
- (c) Drowning (Immersion): Definition, cause of death, types of drowning Dry drowning, wet drowning, fresh water drowning, salt water drowning, Shallow water drowning, immersion syndrome and Secondary drowning. Pathophysiology of drowning in case of fresh water and salt water. Fatal period, external and internal postmortem findings, laboratory diagnosis and medico legal aspects of drowning.
- (d) Suffocation deaths: Definition types of suffocations i.e. Smothering, Choking Gagging, Traumatic Asphyxia, Overlying, Inhalation of Irrespirable gases and Burking. Cause of death, Fatal period, external and internal postmortem findings and medico legal aspects of each.

5. Thermal deaths

General effects of Heat i.e. Heat cramps, heat exhaustion, heat stroke, local effects of heat i.e. burns due to flame, Dupuytren's classification, medico legal classification, age of burns, cause of death, fatal period, factors influencing the outcome and prognosis of burns, external and internal postmortem finding, and medico legal aspects of burns.

- (a) Scalds: Introduction, features and medico legal aspects of Scalds.
- (b) Cold: General effect i.e. Hypothermia and local effects of cold i.e. frost bite, trench foot, External and internal postmortem findings and medico legal aspects in death due to the cold.

6. Deaths due to electricity and lightning

Factors influencing Electrocutation, causation and outcome of effects of electric current. Cause of death external and internal postmortem findings and medico legal aspects in deaths due to the cold.

7. Injuries (Medico legal Considerations and Types

Definition of injury, wound, antemortem and postmortem injuries, acts of volition, concept of mortal wound, offences against the human body enshrined in the Indian Penal code and classification of injuries:

I Mechanical or Physical Injuries:

A) Those Caused by Blunt Force

- Abrasions
- Contusions (Bruise)
- Lacerations

B) Those caused by Sharp Force

- Incisions
- Punctures (punctures may incised punctures or lacerated punctures)

C) Caused by firearms

- By rifled firearms
- By smooth-bored firearms
- By country made weapons

II Thermal Injuries

A) Due to heat

Generalised effects of heat i.e.

- Heat hyperpyrexia (Heat stroke)
- Heat exhaustion (Heat Collapse)
- Heat Cramps (Miner's Cramps)

Effects of local application of heat

- Burns (due to application of dry heat)
- Scald (due to application of moist heat)

B) Due to cold

Generalised effects of cold like

- Hypothermia

Local effects of cold like

- Frost bite (due to dry cold)
- Trench foot (due to wet cold)

III Caused by chemical agents

- Corrosion (due to strong and alkalis)
- Irritation (due to weak acids, alkalis, vegetables or animal extracts etc.)

IV Miscellaneous

A) Lightning

- Electricity
- Radiation (X-rays, Ultra-violet, radio-active substances etc.)

B) Depending upon gravity

- Simple
- Grievous
- Dangerous

C) **Depending upon time of infliction.**

- Ante mortem
- Postmortem
- Perimortem

D) **Depending upon manner of infliction / sustaining.**

- Suicidal
- Accidental
- Homicidal
- Self-inflicted
- Fabricated/Fictitious injuries

8. **Blunt Force Injuries**

Abrasions :- Definition types i.e. scratches, grazes Pressure abrasions, imprint abrasions age of abrasions and medico legal aspects.

Bruise (Contusion): Definition, factors influencing, production and appearance of bruise, age of bruise and medico legal aspects.

Laceration : Definition, types; Split, tears, stretch, avulsion, characters and medico legal aspects of lacerated wounds.

9. **Sharp Force Injuries**

Incised wounds: Definition, characters, age and medico legal aspects.

Punctured or stab wounds: Definition, type i.e. puncture, penetrating and Perforating wounds, characters of puncture/stab wounds and medico legal aspects.

10. **Firearm Injuries**

Structure of Firearm and cartridge, types of firearms, composition of cartridge, types of projectiles, characters of injuries produced by rifled and smooth-bored firearms at various ranges. Ricochetting of bullet, tandem bullet. Procedure for conducting autopsy in death due to firearms injuries and medico legal aspects.

11. **Explosion Injuries**

Mechanism of production characters of the wounds, cause of death and medico legal aspects.

12. **Transportation Injuries**

Injuries received in road accidents, by the pedestrians motorcyclists/scooterists, front seat passengers and back passengers. Medico legal aspects of transportation injuries.

13. **Regional Injuries**

Injuries to the Head: Scalp, skull and brain, concussion extra dural haemorrhage, sub- dural haemorrhage, sub- arachnoid haemorrhage, intra- cerebral haemorrhage. Contusions and lacerations of brain. Salient features of injuries to the other parts of the body.

14. Sexual offences and sex perversions

Definition, types i.e. natural and un-natural sexual offences: Rape (definition, explanation of sections 375 and 376 of I.P.C., procedure for external and internal examination of the victim and medico legal aspects), Adultery, Incest Un-natural sexual offences: Sodomy, Lesbianism, Buccal Coitus, Bestiality. Sex-perversions: Masochism, Voyeurism, transvestism, fetichism etc.

15. Pregnancy and delivery

Signs of pregnancy in the dead and their medico legal aspects. Signs of recent delivery in the living and in the dead, signs of remote in the living and the dead.

16. Abortion

Definition types i.e. Spontaneous and induced abortion. Medical Termination of Pregnancy Act (MTP Act), Method adopted for inducing criminal abortion i.e. abortifacient drugs use of general violence, use of local violence. Cause of death and complications and criminal abortions. Postmortem findings in case death due to criminal abortions. Penal provisions related to criminal abortions.

17. Infanticide

Definition, differentiation between English law and Indian law, dead born/ still born. Age of viability and its determination, signs of live-birth. Medico legal aspects of infanticide. Abandoning of children.

18. Potency, Legitimacy and Fraternity

Medico legal significance of impotency, artificial insemination, legitimacy, paternity and disputed paternity.

19. Virginity and defloration

Definition, medico legal importance of hymen, true and false virgin.

20. Social, legal and ethical aspects of AIDS

Social problems, medical problems, legal aspects of diagnosis and ethical/moral aspects in relation of patients and society at large.

21. Forensic Psychiatry

Definition, medico legal aspects and types of illusion, hallucination, delusion, impulse, somnambulism, delirium, obsession, lucid interval and psychopath. Classification of Psychiatric disorders. True and false insanity, restraint of the insane, civil and criminal responsibility of the insane. Doctrine of diminished responsibility. Testamentary capacity.

22. Forensic Toxicology

General aspects of poisoning, laws relating of poisons, duties of a medical practitioner in a case of suspected poisoning, evidence of poisoning in the living and the dead, collection, preservation and dispatch of viscera for chemical analysis. Classification of poisons. Diagnosis and management of common poisons : Alcohol, aluminium phosphide, Zinc-phosphide, barbiturates tranquillisers, organophosphorus compound, morphine (heroin) anaesthetic gases, cannabis, cocaine, carbon

monoxide, lead, thallium, aconite, food poisoning, antidepressants and hallucinogens. (Differentiation between poisonous and non-poisonous snakes, constituents and actions of venoms in various snakes. Diagnosis and management of snake-bite. Post-mortem findings in death due to snake-bite)

Suggested Books :

- I. Medical Jurisprudence & Toxicology edited by B.V. Subrahmanyam.
- II. Essentials of Forensic Medicine & Toxicology by Dr. K.S. Narayan Reddy.
- III. Principles of Forensic Medicine by Apurba Nandy.
- IV. Principles of Medical Jurisprudence & Toxicology by C.K. Parikh.
- V. Text Book of Forensic Medicine & Toxicology by Krishan Vij.
- VI. Text Books of Forensic Medicine & Toxicology by Prof. J.B. Mukherjee. (Vol-I & 2)
- VII. Hand Book of Forensic Medicine & Toxicology by Prof. V.V. Pillay.

PRACTICALS

1. 10 Autopsy Demonstration Along with written Records
2. Collection, Preservation & Forwarding of the Medico legal specimens.
3. Study of Weapons, specimens, Poisons, Models & Photographs:-
 - (A) Weapons study will include:
 - Description & Diagram
 - Medico Legal Importance
 - Practical written record
 - (B) Study of Medico legal Specimens
 - Dry Specimen -do-
 - Wet Specimen -do-
 - (C) Study of Poisons -do-
 - (D) Study of Medico legal Photographs -do-
 - (E) Models -do-
4. Study of Clinical Cases:-
 - I. Injury Reports (Various Types)
 - II. Age Determinations
 - III. Alcohol/Drunkenness Cases
5. Study of Foetus:-
 - Age Determination
 - Sex Determination
 - Viability
6. Study of Medico legal Radiographs: - Identification with medico legal Importance.
7. Study of Medico legal Slides:-
Hair, Diatom, Seminal stains,
Salivary & Blood stains
8. Study of Bones:-
 - (a) - Skull
 - Pelvis
 - Mandible
 - Others
 - (b) Examination of Skeletal Remains:-
9. Study and Staining Procedures (consisting of the following body fluids):-
 - I. Blood
 - II. Seminal Fluid
 - III. Saliva
10. Study of Instruments:-
 - Various Tubes & Catheters
 - Autopsy Instruments.

2. *GENERAL MICROBIOLOGY

Distribution of marks and syllabus

Theory		Syllabus/Topics	No. of Questions
Paper - A	Part - I	General Microbiology & Immunology	Six questions (Three in each part) each part may have one Long question and other as short notes.
	Part - II	Systemic Bacteriology including Rickettsia, Chlamydia & Mycoplasma & related applied Microbiology	
Paper - B	Part - I	Mycology, Virology & related Applied Microbiology	
	Part - II	Parasitology related applied Microbiology	

General Microbiology

Sr. No.	Topic of Lecture	Contents
1.	Introduction and Historical Background	(a) Morbidity and mortality data of infectious diseases prevalent in our county (with reference to the National Health Programme) and in local geographic area. (b) Importance of Medical Microbiology in diagnosis and prevention of infectious diseases. Contribution of Anatomy van Leeuwenhoek, Pasteur, Lister, Robert Koch, Fleming, Jenner etc.
2.	Definition	(a) Medical Microbiology which includes the branches, Bacteriology, Virology, Mycology, Parasitology and Immunology, Infection, Pathogen, Commensal, Symbiosis, Host, Vector, Contagious Disease, Infectious disease, Epidemic, Endemic, Pandemic & Zoonosis. (b) Source, Mode of infection, route of infection and spread, Endogenous and exogenous infection, reservoir of infection.
3.	Morphology of Bacteria and classification	Bacterial cell, Prokaryotic cell, difference between Prokaryotes and Eukaryotes. Morphological classification, Method of studying of bacteria, Staining methods and their principles, especially Gram and Zeihl Neelsen Staining their importance in presumptive diagnosis, egative staining methods.

4.	Physiology of Bacteria growth requirement and metabolism	Nutrition, Respiration (aerobic and including anaerobic) and growth of bacteria, growth curve, physical factors influencing growth. Culture Media:- Definition , Classification and Application. Can add note on important constituents of culture Media.
5	Identification of Bacteria	Specimen collection, Transportation and processing of specimens for microbiological diagnosis which includes culture methods, biochemical reactions and serological tests and animal pathogenicity.
6	Sterilization and Disinfections	Definition of sterilization, disinfection, Asepsis, antisepsis, ubiquity of bacteria, Modes of killing microbes and preventing them. Enumeration of physical methods of sterilization which includes principles and their application. Detail on working and efficacy testing of autoclave, Hot air oven, Inspector and, Koch's steamer. Concept of central sterile Supply Department (CSSD), Modes Aldehydes, Acids, Alcohol, Heavy metals, Oxidizing agents and briefly about antiseptic policy. Universal Biosafety precautions.
7	Chemotherapy	Mode of action of antimicrobials on bacteria antimicrobial susceptibility tests, disk diffusion test- Kirby – Bauer's method and Stoke's method. Tube dilution test i.e. Minimum inhibitory concentration test. Briefly about Antibiotic Policy.
8	Bacterial Genetics and Drug Resistance	Defination, Genotype and Phenotype, Basic structure of DNA, Condon, Lac operon, Mutation, Transduction, Transformation, Conjugation and R factor. Mechanisms of Drug resistance and transfer of resistance. Brief introduction to Gentic engineering.
9	Normal Flora	Introduction – various sites, types and role.
10	Waste Disposal	Definition of waste, Classification, Segregation, Transport and Disposal.

IMMUNOLOGY

Sr. No.	Topic of Lacture	Contents
1.	Introduction	Definition of immunity, types of immunity, factors responsible, mechanism of innate immunity, Active and passive immunity, local immunity and can add note on herd immunity.
2.	Antigens, HLA	Definition, types, antigen determinants, properties of antigen. MHC – concept, class I, II and III, fuctions, indication and typing, MHC restriction.
3.	Antibodies	Definition, nature, structure of immunoglobulin – papain digestion, isotypic, allotypic and idiotypic markers, immunoglobulin classes, Physical and biological properties of immunoglobulin. Mention – Pepsin digestion, amino acid sequence, immunoglobulin domains, abnormal immunoglobulin.
4.	Serological Reactions	Definition of titre, sensitivity and specificity, prozone phenomenon, Principles, Types and application of precipitation, Gel diffusion, Agglutination, Complement fixation, ELISA, RIA, immunoflorocent test, neutralization and opsonization.
5.	Structure and function Of Immune System	Primary lymphoid organs – thymus, bursa of Fabricius, Bone marrow. Secondary lymphoid organs lymph nodes, spleen, mucosa – associated lymphoid tissue, gut associated lymphoid tissue (MALT and GALT). Cells of immune system – lymphocytes, T cell, B cells, Null cells, Antigen presenting cells (APC).
6.	Immune Response	Humoral – Primary and Secondary immune responses, principle and uses of monoclonal antibodies, factors affecting immune response. CMI – Definition, types, role of T cells and macrophages. Immune tolerance – Definition and mechanism of tolerance.
7.	Complement	Definition, components, synthesis, pathways of activation, role and biological functions, measurement.
8.	Hypersensitivity	Definition, Classification, Difference between immediate and delayed reactions, mechanism and manifestation of anaphylaxis, types and tests for anaphylaxis.
9.	Autoimmunity	Definition, Mechanism, Classification and Pathogenesis.

- | | | |
|-----|------------------------------------|--|
| 10. | Transplantation and tumor Immunity | Types of transplants, mechanism of transplant rejection, prevention of graft rejection, graft versus host reaction. Tumor antigens, Immunological reactions to Tumors. |
| 11. | Immuno Deficiency | Classification, Examples, Manifestations and laboratory tests for detection. |
| 12. | Vaccination | National immunization Programme. Immunoprophylaxis. Nature of vaccines, rationale and dosage. Principles of Immunization. Future Vaccines. |

PARASITOLOGY

Sr. No.	Topic of Lecture	Contents
1.	Introduction of Parasitology	Parasite:- their nature, classification, of terminology, emerging parasitic infections.
2.	<i>E. histolytica</i>	Geographical distribution, habitat, morphology, life cycle, Pathogenesis, laboratory diagnosis, Treatment, control.
3.	Free living amoebae flagellates	<i>Giardia</i> , <i>Trichomonas</i> , Free living amoebae - <i>Negleria</i> , <i>Acanthamoeba</i> , <i>Balamuthia</i> .
4.	Haemoflagellates	<i>Leishmania donovani</i> – Geographical distribution habitat Morphology, Life Cycle, Pathogenesis, Laboratory diagnosis, Treatment, Immunoprophylaxis. Brief account of Trypanosomes.
5.	Malaria	Malaria parasites:- Geographical distribution, habitat, Morphology, Life cycle, Pathogenesis, Laboratory Diagnosis, Treatment, Control, immunoprophylaxis.
6.	Miscellaneous Pathogenic Protozoa	<i>Toxoplasma</i> . Brief account on <i>Cryptosporidium</i> , <i>Isospora</i> , <i>Balantium Coli</i> .
7.	Cestodes	<i>Taenia saginata</i> and <i>solium</i> , <i>Echinococcus granulosus</i> Life cycle, Morphology, Pathogenesis, Laboratory diagnosis, control. Brief account of <i>H.nana</i> , <i>D.latum</i> .
8.	Trematodes	Schistosomiasis – Geographical distribution, habitat, Morphology, Life cycle, Pathogenesis, Laboratory Diagnosis. Brief account of <i>Fasciola hepatica</i> .
9.	Intestinal Nematodes	Geographical distribution, habitat, Morphology, Life cycle, Pathogenesis, Laboratory diagnosis, Control <i>E. vermicularis</i> , <i>T. Trichura</i> . Brief account on <i>S. stercoralis</i> - Life cycle, Morphology, Laboratory diagnosis.

10. Tissue Nematodes Geographical distribution, habitat, Morphology, Life cycle, , Morphology, Pathogenesis, Laboratory diagnosis, Treatment, control, Immunoprophylaxis of W.brancofti, D. medinensis, in brief – T.spiralis.

MYCOLOGY

Sr. No.	Topic of Lecture	Contents
1.	General Mycology	Nature of Fungus (Definition, Differences with bacteria). Characterization of fungi, Brief account of types of sporulation. Morphological and clinical classification of fungi, Method of identification. Laboratory diagnosis of fungus.
2.	Superficial Mycosis	Enumerate, clinical feature, morphological features. Predisposing factors, Lab diagnosis – Specimen collection, Microscopy, Cultural characteristics of important species.
3.	Subcutaneous Mycosis	Enumerate, Predisposing factors, Mycetoma, Rhinosporidiosis, Pathogenesis and Lab Diagnosis. Mention briefly about Sporotrichosis and subcutaneous phycomycosis.
4.	Systemic Mycosis	Classification, Predisposing factors, Candida, Cryptococcus, Histoplasma capsulatum morphology, Pathogenesis, Lab Diagnosis with cultural characteristic.
5.	Opportunistic fungal Infection	Classification, Predisposing factors, Morphology of Mucor, Aspergillus, Pneumocystis carinii.
6.	Antifungal agents.	

VIROLOGY

Sr. No.	Topic of Lecture	Contents
1	General Virology	Basic structure, Shape, Size, Symmetry, resistance, multiplication, classification of viruses, pathogenesis and pathology of viruses, concept of virions. Bacteriophage with relation to virulence mechanism and Epidemiology. - Laboratory diagnosis of viral infections, Collection of samples, Transport, Cultivation and method of diagnosis. - Viral immunity and treatment – viral immunity, interferons, viral vaccines. - Commonly used antiviral agents.

2.	Pox Viruses	Molluscum, Concept of smallpox, Monkey pox.
3.	Herpes Viruses	List of viruses included, Lesions produced, pathogenesis and latency, laboratory diagnosis, method of prevention.
4.	Adeno Viruses	Morphology, Pathogenesis, laboratory diagnosis.
5.	Papova, Parvo, Corona	Brief Discussions.
6.	Hepatitis Viruses	Immunity, Resistance, Laboratory Diagnosis, method of prevention and control (including vaccines) in detail.
7.	Picorna Viruses	- Classification, Morphology Pathogenesis, Clinical features, Immunoprophylaxis of Poliomyelitis, important features of coxsackie, Enteroviruses.
8.	Orthomyxo Viruses	- Morphology, Pathogenesis, Classification, Antigenic variation in influenza virus with relevance to vaccine efficacy.
9	Paramyxo Viruses	- Important features of measles, mumps and rubella including prophylaxis.
10	Arboviruses	List of arboviruses prevalent in India, Dengue, KFD, Japanese encephalitis – Definition, Classification, Pathogenesis, Laboratory diagnosis And control.
11	Rhabdoviruses	Morphology, Pathogenesis, Antemortum diagnosis in rabies. Antirabies vaccines.
12	Viral Gastroenteritis	Causative viruses, Laboratory diagnosis of rotavirus.
13	Retroviruses	HIV/AIDS, Morphology, Pathogenesis, Immunity, Lab diagnosis, Laboratory tests and their on interpretation, Universal precautions, Specific precautions, Recent trends in diagnosis and prophylaxis.
14	Slow and Oncogenic Viruses	Characteristic of slow virus infection. Pathogenesis and Laboratory diagnosis and viruses associated with tumors.

APPLIED MICROBIOLOGY

1. Gastrointestinal infections (Diarrhea and Dysentery) and their laboratory diagnosis.
2. Upper Respiratory tract infections (Patch and sore throat) and their laboratory diagnosis.
3. Lower Respiratory tract infections (Pneumonia, Bronchitis, Bronchiolitis etc.) and their laboratory diagnosis.
4. Urinary tract infections and their laboratory diagnosis.
5. Infection of Central Nervous System (Meningitis, Encephalitis, Brain abscess) and their laboratory diagnosis.
6. Wound infection and Pyogenic infections.
7. Pyrexia of unknown origin, organisms and their laboratory diagnosis.
8. Sexually transmitted disease and their laboratory diagnosis.
9. Eye infections and their laboratory diagnosis.
10. Bone and joint infections and their laboratory diagnosis.
11. Food poisoning and their laboratory diagnosis.
12. Hospital infections, role of laboratory in cross infections, control policies.

SYSTEMIC BACTERIOLOGY

Sr. No.	Topic of Lecture	Contents
1.	Gram Positive Cocci	<ul style="list-style-type: none"> - <u>Staphylococcus</u> - Classification, Morphology, Resistance, Toxins, Antigens, Pathogenesis, Laboratory diagnosis, Treatment, Prevention and Control, Special stress On antibiotic resistance, Epidemiology. - <u>Streptococcus/Enterococcus/Pneumoccus</u> - Classification, Morphology, Growth on Blood agar, Resistance, Toxins, Antigens, Pathogenesis, Laboratory diagnosis, Treatment, Prevention and Control. Rapid bed side diagnostic tests.
2.	Gram Negative Cocci	<ul style="list-style-type: none"> - <u>Neisseria.</u> - Morphology, Resistance, Pathogenesis, Laboratory diagnosis, Treatment, Prevention and Control. - Rapid bed side diagnostic tests.
3.	Gram Positive Bacilli	<ul style="list-style-type: none"> - <u>C. diphtherias.</u> - Morphology, Resistance, Pathogenesis, Laboratory diagnosis, Treatment, Prevention and Control. - Mycobacterium tuberculosis. - Classification, Morphology, Growth on L.J. , Resistance, Pathogenesis, Antigens, Laboratory diagnosis, Immune response, Treatment, National control and Eradication programme. - <u>Atypical Mycobacteria.</u> Classification, Morphology Growth on L.J., Resistance, Pathogenesis, Laboratory diagnosis, Prevention and Control. HIV and Mycobacteria. <u>M.leprae</u> Classification, Morphology Resistance, Antigen, Pathogenesis Animal Pathogenicity, Laboratory Diagnosis, Prevention and Control.
4.	Bacillus – B. anthracis, B.cereus	<ul style="list-style-type: none"> Classification, Morphology, Resistance, Pathogenesis, Laboratory diagnosis, Prevention and Control. Mention about biological warfare.
5.	Cl.welchii, Cl.tetani, and Cl. Botulinum	<ul style="list-style-type: none"> Classification , Morphology, Resistance, Toxins, Pathogenesis, Laboratory diagnosis, Prevention And Control.
6.	Anaerobic Gram Negative Bacilli (Non spore bearing)	<ul style="list-style-type: none"> Classification, Morphology, Cultural characteristics, Resistance, Pathogenesis, Laboratory diagnosis, Prevention and Control.

7.	Enterobacteriaceae	General Characters and Classification. Morphology, Resistance, Pathogenesis, Laboratory Diagnosis, Prevention and Control.
8.	Salmonella, Shigella	Classification, Morphology, Antigenic structure, Resistance, Pathogenesis, Laboratory diagnosis, Prevention and Control.
9.	Yersinia	Morphology, Pathogenesis, Laboratory diagnosis.
10.	Haemophilus, Bordetella Brucella	Morphology, Pathogenesis, Laboratory diagnosis, Prevention and Control.
11.	Vibrio, Campylobacter H.pylori	Classification, Morphology, Resistance, Pathogenesis, Laboratory diagnosis, Prevention and Control, National control and Eradication programme.
12.	Other GNB, New Bacteria	List only, Morphology, Pathogenesis, Lab Diagnosis.
13.	Pseudomonas	Morphology, Pathogenesis, laboratory diagnosis, Prevention and control.
14.	Spirochaete	Classification, Morphology, Resistance, Pathogenesis, Laboratory diagnosis.
15.	Actinomycetes, Nocardia	Morphology, Pathogenesis, Laboratory diagnosis.
16.	Rickettsia, Chlamydia, Mycoplasma	Classification, Morphology, Pathogenesis, Laboratory diagnosis.
17.	Bacteriology of Air, Water, Milk and Food	Bacterial counts.
18.	Pathogenesis	Source of reservoir, Mode of infection, Infective dose, Multiplication and spread, Clinical features, Pathology, Complications, Virulence factors, Immunological response.
19.	Laboratory diagnosis	Includes specimen selection, Collection, Transport, primary smear, Hanging drop, Selection of media, Animal pathogenicity testing, Antibacterial drug Sensitivity, Serological reactions and their interpretation, Newer methods of diagnosis.

Practical

General Bacteriology:-

- Microbiology, Micrometry, Morphology, Motility.
- Staining Method – Gram staining, Z-N Staining.
- Culture media, Biochemical reaction.
- Demonstration of Bacterial capsule, Spore metachromatic granules.
- Scheme for laboratory diagnosis of infective disease which includes collection, storage and transport of microbiological specimens.
- Sterilization – Demonstration of physical agents, chemical agents and method of waste disposal.
- Laboratory Animals.

Systemic Bacteriology:-

- Identification by staining, culture, biochemical reactions, serology and special diagnostic procedures for important bacteria.

Immunology:-

- Application of agglutination reaction – Widal test, latex agglutination test for R.A. factor.
- Precipitation tests – VDRL test, RPR tests, Gel diffusion techniques.
- TPHA.
- ELISA
- ASO
- Complement fixation test.

Virology:-

- Morphology of important viruses.
- Egg inoculation Techniques

Mycology:-

- Identification by staining, culture, lactophenol cotton blue preparation, serology and special diagnosis procedures for important fungi.

Parasitology:-

- Medical Entomology.
- Stool Examination for demonstration of trophozoites, cyst and ova of the parasites.
- Demonstration of blood smear – (thin and thick smear) for demonstration of malaria parasite.
- Demonstration of promastigote and amastigote forms of Leishmania donovani.
- Demonstration of NIH swab and NNN media.

Suggested Books

Books recommended:-

- | | |
|--------------------------------------|------------------------|
| 1. Text book of Microbiology | - R. Anathanarayan |
| 2. Textbook of Medical Microbiology | - C.K. Jayaram Paniker |
| 3. Textbook of Medical Microbiology | - Rajesh Bhatia |
| 4. Textbook of Medical Parasitology | - Itchpujani |
| 5. Microbiology in Clinical Practice | - Arora & Arora |
| 6. A textbook of Parasitology | - Arora & Arora |
| 7. Parasitology | - D.C. Shanson |
| | - Dr. R.P. Karyadarte |
| | - Dr.A.S.Damle |
| | - Chatterjee |

Reference books:

- | | |
|--|-------------------------------------|
| 1. Mackie McCartney Practical Medical Microbiology | - Colle JG, Fraser AG |
| 2. Principles of Bacteriology, Virology & Immunology | - Topley Wilison Volume – 1,2,3,4,5 |
| 3. Medical Mycology (Emmons) | - Know-Chung |
| 4. Review of Medical Microbiology (Lange) | - Jawetz |
| 5. Immunology | - Weir DM |
| 6. Medical Microbiology | - David Greenwood Richard stack |
| 7. Parasitology | - John Pentherer |
| 8. Medical Virology | - KD Chatterjee |
| 9. Mackie McCartney Medical, Microbiology (Vol-I) | - Timbury MC |
| | - Duguid JP |

3. *Pathology

Distribution of marks and syllabus

THEORY:

	Syllabus /Topics	No.of Questions
Paper- A:		Six questions (Three in each part) Each part may have on long question & others as short notes
Part-I	1. Cell Injury Adaptation and Death 2. Inflammation and Repair 3. Fluid and Haemodynamic Disorders, Thrombosis and Shock 4. Diseases of Immunity	
Part-II	1. Neoplasia 2. Genetic and Storage Diseases 3. Diseases of Infancy and Childhood 4. Infectious Diseases 5. Nutritional Diseases 6. Diseases of Red Blood Cells, White Blood Cells, Platelets and coagulation Disorders. (HAEMATOLOGY)	
Paper- B:		
Part-I	1. Diseases of Heart and Blood Vessels(CVS)] 2. Diseases of Lung AND Upper Respiratory Tract 3. Head and Neck 4. Reticuloendothelial System 5. Liver & Biliary Tract 6. Gastrointestinal Tract	
Part-II	1. Pancreas 2. Endocrine System 3. Kidney & its collecting system 4. Male & Female Genital System 5. Breast 6. Musculoskeletal System 7. Central Nervous System & Eye 8. Miscellaneous- Cytology, Chemical Pathology, Applied Pathology	

Syllabus

SECOND PROFESSIONAL MBBS PATHOLOGY

PAPER- A

(General Pathology & Haematology)

- Part-I 1. Cell Injury Adaptation and Death
2. Inflammation and Repair
3. Fluid and Haemodynamic Disorders, Thrombosis and Shock
4. Diseases of Immunity
- Part-II 1. Neoplasia
2. Genetic and Storage Diseases
3. Diseases of Infancy and Childhood
4. Infectious Diseases
5. Nutritional Diseases
6. Diseases of Red Blood Cell, White Blood Cells, Platelets and Coagulation Disorders. (HAEMATOLOGY)

PAPER- B

(Systemic Pathology)

- Part-I 1. Diseases of Heart and Blood Vessels(CVS)]
2. Diseases of Lung AND Upper Respiratory Tract

3. Head and Neck
4. Reticuloendothelial System
5. Liver & Biliary Tract
6. Gastrointestinal Tract

Part- II 1. Pancreas

2. Endocrine System
3. Kidney & its collecting system
4. Male & Female Genital System
5. Breast
6. Musculoskeletal System
7. Central Nervous System & Eye
8. Miscellaneous- Cytology, Chemical Pathology, Applied Pathology

PRACTICAL:

- Histopathology
 Cytopathology
 Clinical Pathology
 Urine Analysis
 Museum Specimens Discussion & Tutorials

Syllabus

SECOND PROFESSIONAL MBBS PATHOLOGY

PAPER-A

1. **Cell Injury, Adaptation & Death**

INTRODUCTION OF PATHOLOGY

Reversible & Irreversible Cell Injury, General Pathways, Mechanisms & morphology of Reversible cell injury and cell death. Necrosis definition, types with examples & morphology. Difference between apoptosis and necrosis. Gangrene types.

Cellular Adaptations to injury:- Atrophy Hypertrophy, Hyperplasia, Metaplasia, Sub-cellular responses to injury. Intracellular accumulations of proteins, glycogen, lipid & pigments. Fatty Change Liver & Heart :- pathogenesis & mechanism.

2. **Inflammation & Repair:-**

Definition & overview

Acute Inflammation :- vascular changes, cellular events, chemical mediators of inflammation & their role in inflammation, outcome of acute inflammation.

Chronic Inflammation :- chronic inflammatory cells & mediators. Granulomatous Inflammation. Granuloma- Definition description & common diseases (tuberculosis, leprosy, syphilis, sarcoidosis, actinomycosis etc.)

Morphological patterns of acute & chronic inflammation. Systemic effect of inflammation.

Tissue repair: cell regeneration and fibrosis

Wound healing: mechanisms, healing by 1st intension, by secondary intention. Factors affecting wound healing.

3. **Hemodynamic disorders, Thrombosis & shock:-**

Edema, Hyperemia & congestion, Hemorrhage & thrombosis, embolism, Pulmonary & thromboembolism. Fat Embolism Air Embolism & amniotic Fluid embolism, infarction Shock: types Pathogenesis, Stages- Morphology & Clinical Course.

4. **Diseases of Immunity.**

General Features of immune system: Cell types, antibodies

Major Histocompatibility Complex – Role in transplantation & diseases association.

Hypersensitivity reactions – Types with examples

Immune deficiency disorders : Examples

Acquired immunodeficiency syndrome: Aetiopathogenesis.

Systemic Lupus Erythematosus- Pathogenesis & morphology.

Amyloidosis- Definition, classification, morphology and application of special stains in its identification.

5. **Neoplasia:**

Definitions, Nomenclature/ classification, of tumors, characteristics of benign & malignant Neoplasms

Features of malignant tumors , epidemiology of cancer, carcinogenesis, routes of spread, grading & staging

Neoplasia, Paraneoplastic syndromes & lab diagnosis of Cancer.

Common Epithelial & Soft tissue tumors : Definition & classification.

Gross & microscopic features of common mesenchymal Tumors : Lipoma,

Leiomyosarcoma, Fibrosarcoma, Rhabdomyosarcoma.

Gross & microscopic features of common epithelial Tumors: Squamous Papilloma, Squamous Cell Carcinoma Basal Cell Carcinoma. Nevus malignant Melanoma, Adenoma, Adenocarcinoma.

6. **Genetics & Storage Disorders** : Concept & Examples.

Down's, Turner's Klinefelter's Syndromes- Brief Discussion.

Gaucher's disease , Neimann – Pick disease, Tay – Sach disease.

7. **Diseases of infancy & childhood:** including Cystic Fibrosis: Definition, pathogenesis, morphology & clinical features .

8. **Infectious diseases**

9. **Nutritional diseases.**

10. **Diseases of Red blood cells, White blood cells, platelets & coagulations disorders (Haematology).**

Anaemias : Classification based on aetiology & morphology.

Iron deficiency anaemia: Aetiology & lab diagnosis.

Megaloblastic anaemia : Aetiology & lab diagnosis.

Sideroblastic Anaemia : Aetiology & lab diagnosis.

Aplastic anemia : Aetiology & lab diagnosis.

Hereditary spherocytosis; Aetiopathogenesis & lab diagnosis.

Sickle cell anemia : Aetiopathogenesis & lab diagnosis.

Thalassemia:- Aetiopathogenesis & lab blood picture, morphology & complications

Paroxysmal nocturnal hemoglobinuria

G-6PD deficiency

Drug induced hemolytic anaemia.

Leucocytic disorders: Leucocytosis, leukemoid reactions, leucopenia.

Leukaemia Modified: FAB classification of acute leukaemia , Peripheral smear & bone marrow findings.

Clinical presentations & lab diagnosis of AML, ALL, CML & CLL.

Multiplemyleloma: Aetiopathogenesis, Morphology & lab diagnosis.

Platelet disorders Idiopathic thrombocytopenic purpura Drug- induced Thrombocytopenia,

Thrombotic thrombocytopenic purpura-aetiopathogenesis & lab diagnosis. Hemorrhagic diathesis :

Basic screening tests & their significance Hemophilia A & B, DIC – Pathogenesis; lab diagnosis.

7
**SECOND PROFESSIONAL MBBS
PATHOLOGY**

PAPER – B

1. Diseases of Heart and Blood vessels (CVS)

The Heart

CONGESTIVE HEART FAILURE

ISCHEMIC HEART DISEASE: Angina Pectoris, Myocardial Infarction, Chronic ischemic heart disease, Sudden cardiac Death.

HYPERTENSIVE HEART DISEASE COR PULMONALE VALVULAR HEART DISEASES:

Rheumatic Fever & Heart disease Aortic Stenosis Mitral Valve

Prolapse & Stenosis, Nonbacterial Thrombotic Endocarditis, Libman- Sacks

Endocarditis, Infective Endocarditis, Prosthetic Cardiac Valves.

PRIMARY MYCARDIAL DISEASE

Left-to-Right Shunts Atrial Septal Defects, Patent Ductus Arteriosus

Right-to-Left Shunts Tetralogy of Fallot, Transposition of the Great Arteries, Congenital Obstructive Lesions, Coarctation of the Aorta.

PERICARDIAL DISEASES

Pericarditis, Pericardial effusion

CARDIAC TUMORS

Metastatic Neoplasms.

The Blood Vessels

Vascular diseases

Congenital Anomalies, Arterio-venous Fistula

ARTERIOSCLEROSIS:- Atherosclerosis

HYPERTENSIVE VASCULAR DISEASE

Hypertension :- Pathogenesis & Mechanisms of Essential Hypertension, Vascular Pathology In Hypertension.

ANEURYSMS & DISSECTION

Abdominal Aortic Aneurysms, Syphilitic (Lentic) Aneurysms,

Aortic Dissection (Dissecting Hematoma)

INFLAMMATORY DISEASE- THE VASCULIDES

Giant Cell (Temporal) Arteritis, Takayasu Arteritis,

Polyarteritis Nodosa, Kawasaki Disease (Mucocutaneous lymph Node Syndrome)

Microscopic Polyangitis (Microscopic Polyarteritis, Hypersensitivity, or Leukocytoclastic

Angitis), Wegner Granulomatosis, Thromboangitis Obliterans (Buerger Disease)

Vasculitides Associated with other Disorders : Infections Arteritis, Raynaud Disease

VEINS AND LYMPHATICS

Varicose Veins, Thrombophlebitis & Phlebothrombosis

Superior & Inferior Vena Cava Syndromes.

Lymphangitis & Lymphedema

TUMORS

Benign Tumors & Tumor-like Condition : hemangioma,

Lymphangioma, Glomus Tumor (Glamangioma), Kaposi

Sarcoma Hemangioendothelioma, Angiosarcoma

Hemangiopericytoma

2. The lung & Upper respiratory Tract

ATELECTASIS (COLLAPSE)

OBSTRUCTIVE AND RESTRICTIVE LUNG DISEASES.

Obstructive Lung Disease, Asthma, Chronic Obstructive Pulmonary Diseases, Emphysema, Chronic Bronchitis, Restrictive Lung Disease, Acute :Lung Injury & Acute Respiratory Distress Syndrome. Hypersensitive Pneumonitis Diffuse Alveolar Hemorrhagic Syndromes, Pulmonary Angiitis And Granulomatosis (Wegner Granulomatosis) the Lung in Clooagen Vascular Disorders , Transplantation pathology.

VASCULAR LUNG DISEASES

Pulmonary Thromboembolism, Hemorrhage & Pulmonary Hypertension & Vascular Sclerosis.

PULMONARY INFECTIONS

Community- Acquired Acute Pneumonias, Community – Acquired Atypical Pneumonias, Pneumonia, Aspiration Pneumonia Tuberculosis- Primary Tuberculosis Secondary Tuberculosis (Re-activation tuberculosis) Abscess.

LUNG TUMORS

Bronchogenic Carcinoma

Bronchial Carcinoid

Pleural Lesions

Malignant Mesothelioma, Pleural Effusion & Pleuritis , Pneumothrax Hemothrox & Chylothorax

LESIONS OF THE UPPER RESPIRATORY TRACT

Acute Infections, Nasopharyngeal Carcinoma, Laryngeal Tumors

Nonmalignant Lesions Carcinoma of the Larynx

3. Head & Neck

Oral Pathology : Pre- Malignant lesions- list & morphology

Squamous cell carcinoma: Aetiopathology & Morphology

Salivary Gland Tumors: Classifications Common Types.

4. Reticuloendothelial system

Lymphadenities: Definition & causes

Reactive & Tubercular – gross & microscopic features

Lymphomas: Hodgkin's diseases, Non Hodgkin's Classification & brief discussion.

Congestive Splenomegaly: causes & morphology.

5. Hepatobiliary System

Pathophysiology of liver disease

Jaundice: Types & Pathogenesis.

Viral Hepatitis : types, Causes gross & microscopic features and sequel of acute Viral Hepatitis.

Portal Hypertension: definition types & major clinical consequences.

Amoebic liver abscess: Gross & microscopic features & complications

Cirrhosis of liver: Definition , aetiology & morphologic types . morphology with special

Referances to Alcoholic Cirrhosis Post Hepatitis Cirrhosis, Wilson's disease, Alfa I Anti-trypsin

Hemochromatosis.

Tumors of liver: Classification hepatocellular Carcinoma hepatoblastoma Gross & Microscopic features.

Gall Bladder: Chronic Cholecystitis: Pathogenesis. Etiology Gross & microscopic features

Choletithiasis: Pathogenesis & morphology

Carcinoma of Gall Bladder: Gross & microscopic features.

6. Gastrointestinal Tract

Oesophagus: Barrett's oesophagus; brief discussion, Achalasia

Carcinoma oesophagus- Aetiopathogenesis, gross and microscopic features.

Stomach- occurrence, common types etiology morphology, peptic ulcer: Definition & sites of aetiopathogenesis, gross & microscopic features & complications. Differences between:

a. Benign & malignant ulcers b. Gastric Duodenal ulcers

Carcinoma Stomach : Classification based on depth of invasion gross & microscopic

Features aetiopathogenesis, gross and microscopic features and investigations.

Intestine

Acute appendicitis: gross microscopic features, complications

Carcinoid tumour & carcinoid syndrome

Tuberculosis of intestine: Pathogenesis, gross & complications. Necrotizing enterocolitis:

Pathogenesis & morphology inflammatory Bowel Disease: (Ulcerative colitis & crohn's disease)

Aetiology ,gross and microscopic features.

Polyps of the large intestine: Classification Comparison of morphology- tubular & villous adenoma.

Carcinoma colon

7. Pancreas: Acute pancreatic Chronic pancreatitis, carcinoma PANCREAS;

8. Endocrine System

Pituitary gland : Hypopituitarism- Causes & brief discussion on Sheehan's syndrome Empty sella syndrome,

Hyperpituitarism- Causes & Brief discussion. Pituitary adenoma, Craniopharyngioma.

Thyroid Gland :- Hypothyroidism & Graves Diseases: Causes & brief discussion on Hypothyroidism- cretinism & myxoedema – brief discussion.

Goiter-types pathogenesis & morphology. Thyroiditis –hashimoto's & Granulomatous – Etiology pathogenesis & morphology

Tumors- classification Gross microscopic features of Thyroid adenoma & carcinoma

Parathyroid Gland: Brief discussion Metabolic bone disease : Rickets & osteomalacia- Clinical features, etiology pathogenesis & morphology

Hyperparathyroidism, Brown tumor.

Adrenal gland:- Cushing's syndrome & Addison's disease – brief discussion

Neuroblastoma, Pheochromocytoma-brief discussion.

9. The Kidney & its Collecting System.

GLOMERULAR DISEASES.

Pathogenesis of Glomerular Diseases & Mechanism of Glomerular Injury.

Glomerular Syndromes & Disorders; The Nephrotic Syndrome, Minimal

Change Diseases, Membranous Glomerulonephritis. (Membranous Nephropathy)

Focal Segmental, Glomerulosclerosis, Membranoproliferative Glomerulonephritis,

The Nephritic syndrome, Acute Proliferative (Poststreptococcal, postinfectious) rapid Progressive (Crescentic)

Glomerulonephritis. IgA Nephropathy (Berger Disease)

Hereditary Nephritis, Chronic Glomerulonephritis.

URINARY OUTFLOW OBSTRUCTION

Renal stones, Hydronephrosis

DISEASES AFFECTING TUBULES & INTERSTITIUM

Tubulointerstitial Nephritis, Acute Pyelonephritis, Chronic Pyelonephritis Acute Tubular

Necrosis.

DISEASES INVOLVING BLOOD VESSELS

Benign Nephrosclerosis, malignant Hypertension & Malignant Nephrosclerosis, Thrombotic Microangiopathies.

CYSTIC- DISEASES OF THE KIDNEY

Simple Cysts, polycystic Kidney Disease,

TUMORS

Renal Cell Carcinoma Wilm's Tumor

Tumors of the Urinary Bladder & Collecting System(Renal Calyces Renal Pelvis, Ureter & Urethra)

10. Male & Female Reproductive System.

Prostate: Benign hyperplasia- etiology pathogenesis-gross & microscopic features

Carcinoma prostate – etiology pathogenesis-gross & microscopic features

Testis: Tumors0Classification & examples

Gross & microscopic features of ,Seminoma, Embryonal Carcinoma, Teratoma

Epididymitis: Tubercular & syphilitic

Female genital Tract & Breast

Endometrium : Simple & complex (Cytoglandular & Adenomatous) hyperplasia-Etiology & morphology of Adenomyosis & its complications, Endometriosis, Carcinoma

Endometrium- Aetiopathogenesis, gross & microscopic features, Leiomyoma:

Aetiology, Gross and microscopic features

Tumors of Ovary; Classification with examples, Aetiopathogenesis gross & microscopic features Mucinous

Cystadenoma Serous Cystadenoma

Teratoma, Dysgerminoma

Placental Tumors: Hydatidiform mole & choriocarcinoma: gross & microscopic features

11. Breast: Breast abscess Aetiology, gross & microscopic features, Tumors of Breast, classification, differential diagnosis of lump in the breast Carcinoma breast pathogenesis, Gross & microscopic features of :-

Fibroadenoma, Fibrocystic disease of breast Ductal (Invasive ductal) carcinoma, Medullary carcinoma

Gynaecomastia:- Definition & causes

Paget's disease of breast: Definition gross & microscopic features

12. Musculoskeletal system

Fracture: Types morphology of healing & factors affecting the healing.

Osteomyelitis: etiology pathogenesis Clinical features & complications

Bone Tumors: Classification, gross & microscopic features

Clinical features & X-ray finding of common bone tumors

Etiopathogenesis, morphological features & complication:

Rheumatoid arthritis, Gout, Osteoarthritis , Tuberculous arthritis

13. Nervous System & Eye

Meningitis: Aetiopathogenesis gross & microscopic features of Bacterial meningitis, viral

Meningitis, Tubercular meningitis

Examination of C.S.F as a tool in its differential diagnosis

Brain abscess:- aetiopathogenesis, morphology & diagnosis

Hydrocephalus, Meningocele Meningomyelocele etc.

Tumors : Classification & Diagramatic representation

Gross & microscopic features of :- Astrocytoma, Meningioma

Retinoblastoma: Gross & microscopic features

14 Miscellaneous

Cytology: General aspects & various types

Fluid cytology; pleural, peritoneal pericardial synovial

Sputum cytology

Cervical & vaginal cytology, sediment & crush smear cytology

Fine needle aspiration cytology Brush Cytology imprint cytology sediment & crush smear cytology

Radiation injury.

Suggested Books:

S.No.	Title	Author	Publisher
1	Robbins Pathologic Basis Of Disease	Cortan, Kumar Collins	Saunders.
2	de Gruchy's Clinical Hematology in medical practice	Frank Firkin	Blackwell
3	Lynch's Medical Laboratory	Stanely S	

PRACTICAL (PATHOLOGY)

1. Histopathology:

Introduction to Histopathology laboratory Histopathology techniques like grossing, Fixation, Processing,

Cutting of Sections and H and E Staining in brief.

Histopathology slides approximately 50 numbers of common representative

Lesions:-

a. Fatty Liver, Amyloidosis Spleen & Kidney

b. Acute Inflammation in organs such as Appendicitis, Lungs
Inflammatory Granulation Tissue. Cellular components of chronic & Granulomatous.

Inflammation. Tuberculosis & Ulcers in intestine. Rhinosporidiosis, Actinomycosis Mycetomas etc. Amoebic liver abscess, malaria liver & Spleen & hydatid cyst Types of Necrosis, Caseous, Coagulative. Liquefactive & Fat Necrosis:-

c. Benign & Malignant epithelial, Mesenchymal, Mixed & Teratomatous Tumors.

2. Cytology

Introduction to cytology laboratory FNAC, PAP & MGG staining.

3. Clinical Pathology including Hematology

Collection of Blood for common Hematological procedures & use of Anticoagulants. Perform with accuracy and reliability basic Haematological

Procedures such as Hemoglobin estimation ESR TLC DLC Peripheral Blood Film & identification Blood Cell PCV & Grouping & Rh typing, Hematology slides 8 to 10 in No. & including neutrophilia, Lymphocytosis, Eosinophilia. Macrocytic & Microcytic Anaemias & Acute Chronic Leukemias.

4. Urine Analysis

Physical, Chemical & microscopic examination & detect abnormalities.

5. Museum Specimen Discussion /Tutorials

Discussion of instruments of Histopathology / Cytopathology / Hematology Lab.

Skills

Describe the rational & principles of technical procedures of diagnostic Laboratory Tests and:-

1. Be able to collect & transport materials for various pathological tests Including
1. Interpret abnormal Laboratory values of common diseases.
2. Interpret peripheral smears of common diseases.
3. Interpret Hb, TLC, DLC & PBF for red cell morphology
4. Interpret result of blood grouping & Rh Typing
5. Interpret abnormalities detected on complete urine examination .

4. *PHARMACOLOGY

Distribution of marks and syllabus .

Theory:

Syllabus/ Topics

No. of Questions

Paper - A Part- I

General Pharmacology, drugs acting On central Nervous system, Local Anesthetic and Skeletal muscle Relaxants.

six questions (Three in each part There should be one Question on clinical Therapeutics. Each part may have one long question and others as short notes.

Part - II

Drug acting on autonomic Nervous System Autacoids, drugs action on Gastro- Intestinal tract & respiratory System, Toxicology & chelating agents.

Paper - B: Part - I

Drugs acting on cardiovascular system, Hypolipemic drugs, drugs acting on Hemopetic system, coagulants & anticoagulants, Chemotherapeutic drugs, specific Chemotherapy.

Part - II

Endocrine hormones & anti - hormonal Agents, drugs acting on renal system Immunostimulants & Immunosuppressant Vitamins, Vaccines & Sera, Medical Emergencies.

PAPER - A

General Pharmacology:

Explanation of the terms: Pharmacology, Drug, Pharmacokinetics, Pharmacodynamics, Pharmacotherapeutics, Placebo, Reactors, Negators, Orphan Drug, Health orphan, Terminology of allied branches, Sources of information, drug Nomenclature.

Nature and sources of drugs: Common sources e.g. plants, animals etc.

Definition of the term: Alkaloids, Glycosides; Oils, Tannin, etc.

Routes of drug administration: common routes, advantages and disadvantages, New drug delivery systems.

Pharmacokinetics:

- a) Absorption and bioavailability of a drug.
- b) Routes of absorption, factors affecting drug absorption and bioavailability.
- c) Bioequivalence - definition and significance.

- d) **Distribution of drugs:** Concept of apparent volume of distribution, protein binding of drugs, blood brain and placental barriers.
- e) biotransformation – definition, types of reactions, consequences factors affecting biotransformation and clinical importance.
- f) Excretion – different routes and factors affecting excretion: First order and zero Order kinetics.
- g) **optimization of dosage:** Biological half- life, loading dose, maintenance dose and steady state, plasma concentration.
- h) Therapeutic drug monitoring.
- i) Methods of prolonging the duration of action of a drug.

Pharmacodynamics:

Principles of drug action, drug receptor interactions, Orphan receptors.
Dose response relationship, different components like ED 50, LD 50 Therapeutic Index.

Factors affecting drug response – physical factors, pharmacokinetics, routes of drug Administration, synergism, antagonism, accumulation.

Factors related to the patient – age, body weight, Sex, Pharmacogenetics, tolerance, dependence.

Adverse drug reaction: Definition, Types and clinical importance.

Drug toxicity- organ toxicity, hypersensitivity, teratogenicity dependence.

Rational drug concepts: Concept, examples.

Essential drug concepts: Principle, importance, model list preparation.

Clinical pharmacology: Introduction to clinical trials ethical issues.

Drug development (inbrief):

Autonomic Nervous System

Introduction: Brief review and physiology of autonomic nervous system.

Definition of the terms- cholinergic, adrenergic, receptors

Broad outline of action.

Cholinergic receptors agonists: Definition and classification.

Esters of choline – acetylcholine (prototype)

Alkaloids – pilocarpine (prototype)

Anticholinesterase- neostigmine (prototype)

Tt of Glaucoma, myasthenia gravis etc and organophosphorus compound

Poisonings, Mushroom poisoning Dhatura poisoning etc.

Muscarinic receptor agonists: Definition

List of drugs- Belladonna alkaloid and atropine substitutes.

Discussion – Atropine (prototype)

Advantages and disadvantages of clinically used atropine substitute.

Adrenergic receptor agonists: Definition.

Endogenous catecholamines: epinephrine, nor epinephrine and dopamine,

Brief review of biosynthesis, storage release,

Discussion – epinephrine (prototype)

- Dopamine.

- Nasal decongestants.

B- adrenergic receptors agonists- selective and non – selective.

Classification of drugs, Pharmacological actions, advantages, uses and adverse effects.

BI and B2 selective agents.

Other miscellaneous drugs- amphetamine and ephedrine etc, action uses and limitations.

Adrenergic receptor antagonists: Definition, Types.

A- blockers- classification of clinically used selective and non- selective preparation, action, uses and adverse effects.

B- blockers- classification of preparations, actions, uses and side effects.

Discussion – Propranolol (Prototype)

BI Antagonists- Advantages, uses and adverse effects.

Skeletal muscle relaxants: Classification

Discussion as group or prototype as per format.

Comparison as salient features of various groups.

Centrally acting muscle relaxants.

Local Anesthetics: Types of Local Anesthesia, Classification, Mech. Of action.

Lignocaine (Prototype). Other LA, Techniques of LA, Uses, Adverse effects etc.

Autacoids and related drugs

Histamine, 5-HT and their antagonists: Classification, uses and side effects

Plasma kinins Angiotensin & ACE – Inhibitors: Mechanism of action, uses, side effects.

Prostaglandins and Leukotrienes: Formation, types, actions, uses and side effects.

Nitric Oxide.

Central Nervous system and special senses

Introduction: Blood brain barrier and neurotransmitters

Aliphatic alcohols: Ethanol and methanol – effects on different organ systems

Acute and chronic alcoholism, methyl alcohol poisoning

General anesthetics: Principles, classification, mechanism, advantages, disadvantages and comparison

Brief notes on various types of anesthetics e.g. balanced anesthesia, dissociative anesthesia, neurolept analgesia etc. preanaesthetic medication – rationale and examples

Sedatives. Hypnotics and pharmacotherapy of insomnia: Benzodiazepines and Barbiturates- advantages and disadvantages, Discussion as per format

Pharmacotherapy of epilepsies:

Types of epilepsies and drugs for each Discussion as per format

Pharmacotherapy of Parkinsonism: Classification of drugs and mechanism of action.

Principles of drug therapy.

Pharmacotherapy of Degenerative diseases: Alzheimers disease H. chorea etc.

Discussion of drugs as per format.

Opioid analgesics and antagonists: Classification, mechanism, pharmacological actions, uses, adverse acute poisoning, management and drug dependence

Nonsteroidal antiinflammatory drugs (NSAIDs):

Classification and discussion of group/prototypes as per the format comparison of the

Salient features of various groups, uses, ADR's, Newer drugs, cox II inhibitors.

Gout: Acute and chronic gout, drug treatment and prophylaxis

Discussion of drugs as per format

Rheumatoid arthritis: Classification of drugs, actions, limitations and adverse effects.

Psychopharmacology Antipsychotics, Anxiolytic Drugs, drugs used in mania,

Discussion of prototype drugs as per format,

Contemporary drug abuse: Examples, features of addiction and principles of Management

CNS stimulants: List probable uses, basis and limitations

Gastrointestinal system:

Pharmacotherapy of peptic ulcer, introduction, review of pathogenesis.

Therapeutic strategies.

Discussion of individual groups/ prototypes as per format.

Comparison between various groups.

Pharmacotherapy of Gastroesophageal reflux disease.

Pharmacotherapy of vomiting: Classify drugs for various situation e.g. motion

Sickness, cancer therapy, drug induced vomiting, pregnancy, Radiation induced Vomiting etc.

Discussion of drugs as per format- metoclopramide, domperidone and cisapride etc.

Pharmacotherapy of constipation: Classification, mechanism of action and adverse

Effects of various groups.

Selection of appropriate purgatives for the different situations.

Pharmacotherapy of diarrhoea : oral rehydration solution-constituents, indications.

Parenteral fluid therapy- indications.

Non-specific antidiarrhoeals and antispasmodic agents.

Hepatobiliary system:

Hepatotoxicity of drugs etc.: Brief discussion.

Drugs used in dissolution of gall stones.

Toxicology (Poisoning):

Principles of management of poisoning.

Heavy metals and their antagonists: Dimercaprol, d- penicillamine, EDTA and related

Drugs etc & Their anti dotes.

Respiratory system:

Pharmacotherapy of bronchial asthma: Types of bronchial asthma acute, chronic and acute severe asthma (status asthmaticus,) COPD.

Classification of drugs, mechanism of action/ pharmacological basis for the use,

Advantages and disadvantages of each group, adverse effects, drug interactions,

Contraindications and special features.

Antihistaminic: classification, comparison of various groups.

Discussion as per format:

Pharmacotherapy of allergic rhinitis: List of drugs, mechanism of action, advantages and limitation.

Pharmacotherapy of cough: Antitussives and mucolytic agents- examples for group, mechanism of action,

Usefulness and limitations, adverse reactions and cautions.

-Expectorants.

Paper B

Cardiovascular System:

Pharmacotherapy of Myocardial Ischemia: Definitions and types of angina

Antianginal drugs- Classification rationale for using the same.

Management of Acute Myocardial Infarction

Pharmacotherapy of hypertension: introduction and grading

Relation between salt intake, sympathetic nervous system and hypertension

Classification, rationale for use, adverse effects and use, general discussion as per format

Management Principles:

Non-pharmacological and Pharmacological management and combination therapy

Pharmacotherapy of cardiac failure: Review of pathogenesis, List of drugs, rational for use in cardiac failure, advantages and disadvantages

Pharmacotherapy of arrhythmias: (working knowledge of commonly used drugs)

Introduction and types of arrhythmias, reentry mechanism etc, classification of antiarrhythmic drugs depending on mode of action and ADRs, Introduction of torsades pointes and drugs causing it

Brief account of each group to elucidate and rational for their use

Shock: types of shock, pathophysiology of some important shock states

Pharmacotherapy of shock, drugs used in different types of shock and rational for using these drugs

Plasma Expanders: List of drugs, important properties, pharmacotherapy of hyperlipoproteinemias, common drugs in clinical use, mechanisms, limitations and clinical utility of the drugs

Blood (Hematinics Coagulants & anticoagulants)

Hematopoietic agents: growth factors, vitamins & minerals

Pharmacotherapy of Iron deficiency anaemia: review of physiology of iron metabolism, oral and parenteral preparations, indications, ADRs & Treatment of overdose

Pharmacotherapy of megaloblastic and pernicious anaemias: Folic acid and vitamin B₁₂ preparations, actions, uses interrelationship between folic acid, vitamin B₁₂ and other hematinics,

Pharmacotherapy of thromboembolic disorder: Anticoagulant classification, thrombolytics and antiplatelet agents, preparations, pharmacological basis for their action and uses

Hemostatics (Styptics etc): classification, action and uses of drugs

Kidney and electrolytes:

Diuretics: definition, processes of urine formation, classification, comparison of different diuretics.

Nephrotoxic drugs: List of drugs and discussions of precautions

Antidiuretics: classification uses ADH as prototype.

Endocrine system:

Introduction: definition, release, feedback, control and general mechanism of action of hormones.

Hypothalamus: Hormones, feedback mechanism action and uses

Anterior pituitary hormones: Classification, Growth Hormones- preparations, problems and uses

Posterior pituitary hormones: Classification, ADH- preparations, problems and uses and ADRs

Thyroid and antithyroid drugs: biosynthesis and physiology of thyroid hormones. Consequences of excess and deficiency of thyroid hormones, classification of drugs Hormones- preparations, treatment of hyper and hypothyroidism.

List of drugs causing hyper and hypothyroidism

Agents affecting calcium metabolism and bone turnover: Parathyroid hormone,

Calcitonin, Bisphosphonates, Vitamins D, Post menopausal syndrome, Integrated

Physiological role and therapeutic implications.

Adrenocorticosteroids and their synthetic analogues:

Review of synthesis, regulation and Physiological actions.

Preparations and comparison of salient features:

Discuss the Pharmacology as per format:

Pharmacology of Endocrine pancreas: List of secretions

Diabetes mellitus –review pathogenesis and life styles

Principles of management, role of insulin and oral hypoglycemics,

List of various preparations and comparison of salient features.

Discuss the commonly used preparations as per format & newer insulins.

Glucagon – actions and uses.

Enumeration of drugs which may modify the blood sugar level.

Reproductive system

Sex hormones : Classification of male and female sex hormones

Review feedback regulation and Physiology, enumerate preparations, study the topic as per format

Antagonists: Classification, uses and rationale: Antandrogens, Antioestrogens, Antiprogestins

Anabolic steroids: Classification, basis for use, misuse

Hormonal contraceptives: Types, mechanism of action, Pharmacological actions, uses, choice of Preparation, adverse effects and contraindications

Ovulation inducing agents: Classification, basis for use and adverse effects

Oxytocics and tocolytics: Classification, mechanism of action, use and adverse effects.

Sexually transmitted disorders: Preparations of choice.

Chemotherapy (Antimicrobial and Cancer)

Antimicrobials : Definition and classification, general principles of antimicrobial chemotherapy.

Antimicrobial drugs: Discussion as per format

Sulfonamides, Trimethoprim and Co-trimoxazole.

Beta lactam antibiotics- Penicilins, Cephalosporins, Monobactams.

Beta-lactamase inhibitors- examples, rationale for combining with betalactams.

Aminoglycosides-Classification, Streptomycin, Gentamicin, Amikacin, Netilmicin, Tobramycin, Neomycin-general features mechanism, kinetics and adverse effects, comparison of clinical useful preparations.

Tetracyclins and Chloramphenicol- Discussion as per format.

Fluoroquinolones- Discussion as per format.

Macrolides- Classification, Discussion as per format, Newer macrolides.

Erythromycin- Prototype

Brief discussion on miscellaneous group of antibiotics for ex- Bacitracin, Vancomycin Clindamycin PolymixinB, Spectinomycin, Fusidic acid etc.

Pharmacotherapy of tuberculosis;

Classification according to antibacterial effects, comparison between primary and secondary antitubercular drugs, regimens and prophylaxis

Discussion of individual drugs as per format

Drugs for resistant tuberculosis and their limitations.

Chemotherapy of Leprosy: Introduction and etiopathogenesis of Leprosy

Classification for antileprosy drugs and multiple drug therapy

Pharmacotherapy of worm infestation: Classification of drugs, mechanism of action, adverse effects and uses- Mebendazole, Thiabendazole, Albendazole, Levamisole, Pyrantel pamoate, Praziquintel and Niclosamide.

Pharmacotherapy of Amoebiasis and giardiasis: Classification

Discussion of individual drugs as per format- Metronidazole, Tinidazole and Diloxanide furoate etc.

Antiparasitic drugs:

Malaria- classification of drugs according to parasitic stage or use, Chloroquin, Primaquin Mefloquin and Quinine, newer antimalarial drugs etc.

Filariasis-DEC, Ivermectin etc.

Leishmaniasis- drugs actions, side effects

Drugs used for sexually transmitted diseases

Pharmacotherapy of anaerobic infections

Antifungal agents: Classification of drugs.

Discussion as per format of Amphotericin B, Griseofulvin, Ketoconazole, Fluconazole etc.

Antiviral agents: Classification of drugs, Discussion as per format Acyclovir, Vidarabine Zidovudine etc.

Anti retroviral agents: HIV, AIDS.

Immuno suppressants.

Biological response modifiers.

Anticancer drugs: Basic principles of management, classification, synopsis of group of drugs, uses adverse effects.

Anti septic & Disinfectants.

Urinary tract Infection : Common Organisms.

Definition and classification of urinary antiseptic and analgesics.

Principles of drug treatment of upper and lower urinary tract infection due to E.coli, proteus, klebsiella, pseudomonas etc. Review antimicrobials of choice for common infections.

Immuno Pharmacology (Immunostimulants and Immunosuppressants)

Biological response modifiers.

Immunomodulators : immunostimulants and immunosuppressants,

Definition and examples.

Others: Vitamins, Vaccines & Sera, Medical Emergencies, Therapeutic Gases,

Bioterrorism, Gene. Therapy, Drug use in pregnancy lactation, neonates & geriatrics.

Dermal & Ophthalmic Pharmacology.

Drugs and placental barriers.

Medication during pregnancy: Examples of safe drugs, teratogenicity, types of damage to foetus and prevention.

Medication during lactation: Examples of drugs secreted in breast milk, consequences and precautions.

Pharmacogenetics: Definition and examples.

Medication to elderly.

Medication to neonates.

Drugs affecting lactation: Bromocriptine as prototype, discussion as per format.

Vitamins A,B,C, E.

Vaccines & Sera, Immunization programme.

Anti oxidants & free radicals.

Medical Emergencies.

Therapeutic gases.

Bio terrorism.

Dermal & Ophthalmic Pharmacology.

Books Suggested

Sr. No.	Book Name	Author	Edition
1.	Principles of Pharmacology	H.L. Sharma & .K.K. Sharma	Current Edition
2.	Essentials of Medical Pharmacology	K.D. Tripathi	Current Edition
3.	Basic & Clinical Pharmacology	Katzung	Current Edition
4.	The Pharmacological Basis of Therapeutics	Goodman & Gilman's	Current Edition

Summary of Practicals:

1. Prescription writing of some common & important disease.
2. Some Therapeutic problems with emphasis on drug interactions and adverse drug reactions.
3. Some percentage calculations.
4. Interpretations of Graphs depicting effect of some Autonomic drugs on:
 1. Isolated Frog Heart.
 2. Isolated Frog Rectus Abdominis muscle.
 3. Rabbit Eye.
 4. Isolated Rabbit intestine.
 5. Critical analysis and comments on some fixed dose combinations Regarding justifications, indications, route and dose, special precautions If any.
 6. Pharmacy Exercises.
 7. Students will be asked to write six case record studies of indoor patients admitted in the Hospital from various Clinical wards.

Practical

25 Marks

Prescription/s

Drug Interactions & Therapeutic Problems

Drug used in Poisoning & ADR's.

Pharmacy Exercise

Interpretation of graphs/tracing/ Data.

Exercise on formulation (FDC's)

% age Calculations

Internal Assessment

15 Mark

Total 40 Marks

1. *FINAL PROFESSIONAL MBBS (PART-1)

ENT

THERE WILL BE TWO SECTIONS – SECTION - A & SECTION - B

TOPICS FOR SECTION - A

OTOLOGY

RHINOLOGY

TOPICS FOR SECTION - B

ORAL CAVITY & PHARYNX

LARYNX AND TRACHEA

OESOPHAGUS

HEAD AND NECK (BRIEF UNDERSTANDING)

RECENT ADVANCES

MISCELLANEOUS DISORDERS

THE ABOVE DIVISION INTO SECTIONS A & B IS MERELY A BROAD DISTRIBUTION OF THE TOPICS.

THERE IS OVERLAP OF SOME TOPICS IN BOTH SECTIONS A & B.

QUESTIONS ON TOPICS WHICH ARE COMMON TO BOTH THESE SECTIONS MAY BE ASKED IN EITHER SECTION.

ANY RECENT ADVANCES IN THE SUBJECT WHICH ARISE IN FUTURE WILL ALSO BE TAUGHT. MAY BE CONSIDERED TO BE INCLUDED IN THE SYLLABUS.